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THE

PRACTICAL MEDICINE SERIES

COMPRISING TEN VOLUMES ON THE YEAR'S PROGRESS IN MEDICINE AND SURGERY

UNDER THE GENERAL EDITORIAL CHARGE OF

GUSTAVUS P. HEAD, M. D.

PROFESSOR OF LARYNGOLOGY AND RHINOLOGY,
CHICAGO POST-GRADUATE MEDICAL SCHOOL

VOLUME V

OBSTETRICS

EDITED BY

JOSEPH B. DE LEE, A. M., M. D.

PROFESSOR OF OBSTETRICS,
NORTHWESTERN UNIVERSITY MEDICAL SCHOOL

With the Collaboration of

D. ROEHLER, M. D.

AND

HERBERT M. STOWE, M. D.

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INTRODUCTION.

The past year has shown little advance in the scientific fields of obstetric research. The subject of eclampsia is still being worked over. Zweifel's discovery of lactacidemia in eclamptic mothers and their children is considered a step in advance. It has not developed much yet. The field of operative obstetrics is being broadened. Pubiotomy is now on the stage enjoying its initial enthusiasm.

Vaginal Cesarean section is winning new adherents. Bossi's dilator is going back to its proper position as a dangerous but not necessarily useless instrument. There has been a halt in the flood of modifications of Bossi's dilator. The surgical treatment of puerperal infections is receiving more attention.

The attempt has been made in this issue of the Year Book to discuss practical subjects more than those purely scientific.

J. B. DE LEE.

34 Washington Street.

OBSTETRICS.

PART I.

PREGNANCY.

Physiology of Pregnancy.

Permeability of the Fallopian Tubes. In a series of experiments on 28 cadavers to determine the permeability of the tubes to fluids injected into the uterus, Buttenberg[1] comes to the following conclusions. With the use of the return-flow catheter fluids seldom permeated the tubes, while if the catheter was of the ordinary variety the fluids permeated in the majority of the cases, but only in small quantities as a rule. If large amounts of fluid were injected under high pressure with the Braun syringe, fluids usually entered the tubes, but permeated them only when the cervix was tight.

Low pressure, withdrawal of the fluids, and the use of small quantities will reasonably prevent the entrance of fluids into the tubes. The same is true when the uterus is swabbed out.

[The active contractions of the uterus induced by an irritating uterine injection may aid in forcing the liquid into the tube. This factor is, of course, absent in cadaveric experiments.—Ed.]

Tubal Menstruation. v. Steinbüchel[2] reports a case of tubal menstruation in a patient in whom the uterus had been removed per vaginam, and the stump of the left tube had been incorporated in the scar. There was a regular discharge of dark menstrual blood from this stump occurring every 3 to 4 weeks and accompanied by the usual physical disturbances. Owing to various other dis-

(1) Muench. med. Woch., No. 35, 1905.
(2) Abst. Zentralb. f. Gyn., No. 42, 1905.

turbances the tubes were finally removed by laparotomy. No pathologic changes could be found.

Fetal Heart Tones. Sarwey[1] contributes his observations in regard to the earliest time at which the fetal heart tones may be heard in 42 additional cases, making a total of 55 cases of pregnancy that were examined between the 12th and 20th weeks. In not a single instance was he able to hear the heart tones as early as the 12th week, but he was successful in hearing them in every case in the 13th week. The duration of pregnancy was determined by the date of the last menses and a careful examination of the size of the uterus. Where the size of the uterus did not exceed the size of a man's fist the heart tones were not heard, but when it had reached the size of a fetal head they were invariably heard, but in a definite, small, circumscribed spot low down on the anterior wall of the uterus directly over the horizontal plane of the internal os. The necessary requisites for hearing them so early are, a practiced ear, absolute quiet, great amount of patience (Sarwey listened once for 65 minutes), an empty bladder (secured by catheterization), and the application of the anterior uterin wall to the abdominal wall, and in some cases by elevation of the whole uterus in combination with sinking the stethoscope deeply behind the symphysis. The advantage of hearing the heart tones so early is that we have an infallible sign of pregnancy at a time when all others are rather presumptive and is of great value in the differential diagnosis of difficult cases.

[Years ago some one invented a vaginal stethoscope for the auscultation of the fetal heart tones. This instrument, which the Editor has never seen, might be recommended for the early diagnosis of fetal life.]

J. C. Sheill[2] investigated the *relation of the fetal heart beat to the sex* in a series of some three hundred cases. If the rate was 141 or less a boy was predicted, if 147 or over a girl, and those falling between these two figures were classed as doubtful.

The percentage of correct predictions of these cases, including those in labor and those not in labor, was 56

(1) Deutsche med. Woch., No. 33, 1905.
(2) Glasgow Med. Journ., January, 1906.

per cent. Of the women examined who were not in labor, the percentage was raised to 73, and counting the primiparæ who were not in labor, but 10 per cent of the children proved to be of the opposite sex to that expected. Of the cases where the heart tones numbered between 141 and 147, the sexes were equally divided. The conclusions drawn from this investigation were that in primiparæ who were not in labor a fair amount of reliance may be placed upon the theory relating to the fetal heart and sex, but that the presence of labor pains or other irritation usually nullifies the accuracy of the prediction.

[Frankenhäuser first tried to prove the relation between the fetal heart tones and the sex of the infant. He believed that the sex was uncertain if the rate of the heart was between 135 and 145. Above 145 a girl, below 135 a boy could be expected. As the heart beats are slower in large children, and as boys are usually larger than girls, there may be some success in guessing the sex thus in pregnancy. The Editor's own experience has been favorable to the theory.]

Variable Tonus of the Uterus. Schaeffer[1] maintains that the variable tonicity of the uterus is not due to motor influences alone, but also to those of a co-ordinated vaso-motor nature. Every dilating stimulus originating from the internal os has a regular dilating influence, even on the non-pregnant uterus, which causes the fundus to balloon outward and upward. This is not to be regarded as a loss of tonus, but is a rearrangement of the muscle fibers with a middle degree of tonus. The grating that is heard during curettage is due to the formation of ledges by the especially strongly contracting muscular layer. The uterus of multiparæ is not capable of a high degree of relaxation.

A predisposition to a high degree of relaxation (that is, ballooning out or stretching asymmetrically) may be produced by subinvoluted, retroflexed and originally hypoplastic uteri, those with an edematous myometritis as in the anemic multiparæ, the uteri after abortion with metrorrhagia, and in cases of ovarian degeneration.

The variations in the caliber of the uterus may be from

(1) Zentralblatt f. Gyn., No. 40, 1905.

2 or 3 to 11 or 12 cm., which may exceptionally occur when the sound is introduced into one of the horns of the uterus. In such cases only flattened curettes should be used in sounding. If the uterus measures more than from 12 to 15 cm. in length, it arouses the suspicion of defective involution of the entire fundus, especially of one horn after an early abortion.

Shaeffer's experience has shown that the affections of the adnexa which produce metrorrhagia also induce a predisposition to a varying tonus leading even up to paralysis, as may be observed in pregnancy.

Simple sounding in the consultation room may show a difference (*e. g.*, $8\frac{1}{2}$ to $10\frac{1}{4}$ cm.) in subinvoluted uteri at the same examination. Perforations may occur without the least sensation of resistance, even with wide metal dilators, perhaps without exception in the tubal region. This may be proven by passing the instrument further in, then withdrawing and passing toward the median fundal region, and by bimanual examination.

Catharine van Tussenbroek[1] states that she has rarely ever curetted that she did not observe a varying degree of tonicity in the uterus. It was quite marked in some cases and had she not been familiar with the phenomenon might have feared that she had perforated the uterus. By waiting a very short time she could perceive the uterus contracting again and the normal sensation was again produced. She attributes the condition to a mechanical irritation which may be due to the curette itself or to the preliminary dilatation with laminaria according to her method. She cites 4 cases to substantiate her arguments and also calls attention to the fact that the condition was originally observed and described by van der Mey in 1894.

Asch[2] believes this condition to be a temporary atony or relaxation, the result of a specific irritation, often following a severe contraction of the uterus. He has observed for some time that it almost invariably occurred whilst operating with an anesthetic. He now seldom uses an anesthetic while curetting and very rarely observes the phenomenon.

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(1) Zentralblatt f. Gyn., No. 34, 1905.
(2) Zentralb. f. Gyn., No. 41, 1905.

Internal Secretion of the Ovaries and Placenta and their relation to the Function of the Mammary Gland. Halbau[1] designates the reactions of the ovaries and placenta upon the organism as *impulses* and names them according to the period in which they are manifested. That occurring during the last weeks of the intra-uterine life of the fetus, when the breasts become larger, etc., is known as the *embryonal* impulse which is imparted by substances originating in the placenta, *i. e.,* the trophoblast and chorion epithelium.

The *puberty* impulse, observed in the increased growth of the breasts, is the result of substances originating in the ovaries.

The *menstrual* impulse, with similar changes in the breasts and uterus, also originates in the ovaries.

The *pregnancy* impulse, on the contrary, is not the result of secretions from the ovaries, which apparently remain dormant or negative, but from the placenta, which becomes the trophic center. The action of the substances originating in the placenta and ovaries is analogous, only those from the placenta are more intense in their action. The negative action of the ovaries is proven by the normal procedure of pregnancy, even after removal of both ovaries.

The changes in the breast cannot be the result of influences originating in the fetus itself, since they continue even after the death of the fetus, nor are they influenced by the uterus itself, or the result of a nervous impulse, since they continue after hysterectomy or the severing of the nerves leading to the breasts.

The act of nursing does not establish lactation, simply removing only the colostrum or milk already present.

[This statement is not supported by clinical experience, as milk can be brought into the breasts of non-puerperal women by certain means.—Ed.]

Puerperal involution is simply a true atrophy following the removal of the placenta. The secretion of milk is established after the inhibiting influence of the placenta and ovaries ceases and is again affected by the reappearance of menstruation or a new pregnancy. The inhibiting influence of the ovaries upon the milk secretion has been

(1) Arch. f. Gyn., B. LXXV, H. 2.

understood among dairymen who have gained a greater and longer secretion of milk by castration of the cows.

Halbau carries the proofs of his assertions into the domains of comparative anatomy. These findings are the result of years of careful, laborious and conscientious research and study and clear up a field or subject which has long been in darkness.

Transmission of Natural Immunity through Placenta. The results of the experiments performed by Schütz[1] in regard to the transmission of natural immunity through the placenta are as follows: (1) Even though the blood serum of the new-born contains antibodies against the diphtheria toxin, the stomach contents may not contain them. (2) Colostrum contains no demonstrable protective agent. (3) That the natural immunity of the new-born is derived through the placenta. (4) The protective power of the serum of the child is great or less as that of the maternal serum. (5) The degree of immunity is individually different. (6) One can assume only a diminished susceptibility towards diphtheria from the presence of antibodies in the serum.

A New Symptom of Pregnancy (*Hypertrichosis graviditatis*). In a considerable number of cases Halbau[2] has observed that there is a more marked growth of the hairs of the body during pregnancy. The finer hairs, known as lanugo, also show an increase—often very marked growth. Many of these hairs disappear after the termination of pregnancy. Halbau attributes this very delicate symptom to the action of substances derived from the placenta which have entered the maternal organism. It may be explained by an increased hyperemia producing excessive nutrition for the papillæ of the hair.

Since the placental substances also circulate in the fetus, the same explanation may avail for the increased growth of lanugo on the fetus in the later months of intra-uterin life.

Halbau has also observed an increase in the height of women who become pregnant during the period in which bony growth is not yet completed.

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(1) Berl. Klin. Woch., No. 40, 1905.
(2) Weiner klin. Woch., No. 1, 1906.

Placentation in Hypoplastic Uteri. According to Schaeffer,[1] the hypoplastic uterus does not furnish very good conditions for the development of a normal placenta. As a result of the disturbance in the development of the decidua and the firm adherence of the villi, portions of the placental tissue may be retained in either full term or premature cases. These portions are eventually discharged from the uterus, accompanied by hemorrhages of various character and duration. In exceptional cases they are not discharged with the lochia or the first menstrual periods, with the result that an amenorrhea may exist for many months without the coexistence of either lactation or a hyperinvoluted uterus. Treatment consists in a careful curettage of the upper necrotic layers of the mucous membrane. Intrauterine treatment should then be instituted to promote hyperemia by means of tamponade with iodoform gauze for several days. Curettage is contraindicated in all other cases of hypoplasia of the uterus (puerperal or post-puerperal), since the mucosa is liable to become regenerated by means of a spongy glandular hypertrophy, whereby the conditions for subsequent pregnancies are materially improved.

Twin Placentæ with Common Amnion. Wenczel[2] reports 2 cases of rare interest. The statistics furnished by the Frauenklinik of Budapest vary somewhat from the general average. Out of 30,205 labors, twins occurred 325 times (1:92) and triplets 8 times (1:3,775). The uniovular twins constituted 22.76 per cent and the binovular 77.23 per cent. But of the 74 cases of uniovular twins, there were but 2 (2.7 per cent) that had a common amniotic cavity. Both occurred in primiparæ, aged 19 and 27 years. In the one case both fetuses presented in the first (I) cephalic presentation, and the second was born immediately after the first. They were both dead, slightly macerated, and showed no abnormalities in growth. The placenta weighed 915 gms. and measured 19x15 cm. On the fetal sides the anastomosis of the vessels of the cord was plainly visible. The cords were inserted excentrically and 2 cm. apart. They were tightly twisted around each other a great many times and at one place

(1) Arch. f. Gyn., B. LXXVI, H. 1.
(2) Zentralblatt f. Gyn., No. 32, 1905.

there was a tight, true knot including both cords. On the inner surface of the amnion there could be seen remains of a formerly existing amniotic wall in the form of shreds measuring from 1 to 7 cm. in length, so it cannot be considered as a common amniotic cavity in the true sense of the term.

In the second case, both fetuses were delivered in the occipito right anterior position, with an interval of five minutes between. The two girls were healthy and perfect and weighed 1,700 and 1,950 gms. respectively. The placenta weighed 975 gms. and measured 20x23 cm. The anastomosis of the umbilical vessels was also plainly visible. The cords were inserted excentrically, 2 cm. apart, and measured 55 and 56 cm. in length. The decidua reflexa, chorion and amnion were all single. The inner surface of the amnion was perfectly smooth, hence it may be considered as a true case of a common amniotic cavity.

Pfeilsticker[1] describes a twin placenta with a common amniotic cavity. The patient was a IIpara. The babies, both girls, were born in the II cephalic position and within five minutes of each other. The first was asphyxiated on account of the pressure of the head of the second on the cord.

The placenta was large, 23x27 cm., and weighed 1,220 gms. The cords were inserted excentrically, 2 cm. apart, and were 42 and 39 cm. long respectively. The membranes were found to form one common cavity. Upon the inner surface of the amnion a ridge or septum of varying height (up to 5 cm.) was seen which passed between the cords. Microscopic examination revealed a double layer of amnion. The writer maintains that it is impossible that a single cavity could exist primarily as stated in the report by Wenczel and that the septum was simply obliterated by the overstretching of the membranes.

Pathology of Pregnancy.

Cystic Degeneration of Chorion. A. R. Matheson[2] describes an atypical case in a patient who had previously

(1) Centralbl. f. Gyn., No. 49, 1905.
(2) Brooklyn Med. Jour., March, 1906.

borne 3 children and had had no abortions or miscarriages. Her condition during the development of the mole was marked by persistent nausea and vomiting. At the expected time of confinement the abdomen was very large and on palpation gave the impression of hydramnion. No fetal outlines could be traced and no fetal heart tones or placental souffle heard. Under anesthesia the cervix was dilated manually, the well-formed membranes ruptured and a large amount of gelatinous fluid allowed to escape. An extensive mass was found in the uterus consisting of bodies varying in size from a grape to a pea, the larger portions showing numerous cysts on a single stem and all a part of the general cluster. The mass was broken down and removed by a large, dull curette. There was no evidence of fetal remains. There had been no discharge of vesicles at any time during the pregnancy, nor had there been any hemorrhage previous to operation. After the operation there was a slight sanguineous discharge resembling lochia, which continued about the same time as in the normal puerperal state. The patient made a complete recovery, has since given birth to three children, and is at the present time in excellent health.

Amniotic Cyst. True amniotic cysts are very rare and the one described by Planchu[1] was found on the fetal surface of the placenta and was about the size of a hen's egg. He believes it was the result of insufficient development of a twin ovum, and hence gives it a new name, namely, "kyste ovulair" (ovular cyst). The placenta itself presented no abnormalities other than that the cord was situated excentrically and that the cyst was situated between it and the nearer edge of the placenta, by means of a pedicle 2 cm. long and 1 cm. thick. It was soft and elastic, and the contents were of a yellowish amber color. The walls were thick and consisted of several layers, covered by amnion, freely movable upon each other and no formed elements were found between them. Histologically, the cyst was formed of two layers, an *outer,* placental amnion, and an *inner* covered with epithelium resembling amnion absolutely. Between the layers there was a substance analogous to the jelly of Wharton. It consisted,

(1) L'Obstetrique, Sept., 1905.

therefore, of two layers of amnion united at the edges with no epithelium between, but instead a thin layer of allantoic tissue. He presumes that it was an ovum of about two months inhibited in its growth.

Cystic Formations on the Human Placenta. Runge[1] reports a case in which a number of large and small cysts (up to 4½ cm. in diameter) were found under the amnion of a placenta of a full-term pregnancy. In addition to the cysts there were a number of fibrous nodules. Runge explains this condition as being the result of some unknown pathologic condition which causes a considerable hypertrophy of the decidua, in consequence of which a decidua subchorialis forms under the membrana chorii and in the middle portions of the placenta. As a result of the poorer nutrition degeneration occurs and the fibrinous nodules are formed. In addition the connective tissue between the decidua cells and the chorionic villi incorporated therein are also involved and become degenerated.

The decidua cells in circumscribed areas under the membrana chorii, may also undergo a hydropic degeneration with the formation of cysts of various sizes.

Neither the amnion, the membrana chorii, nor the Langhans cells are involved in the formation of the cysts.

Twin Pregnancy with Cystic Degeneration of One Ovum. Wagner[2] describes a case of twin pregnancy in which the one product was a mole which was distinctly separated from the smaller normal placenta. It contained a fetus papyraceus, 14 cm. long, whose umbilical cord was marginally inserted in the cystic degenerated placenta. The cord of the normal placenta was connected with a living 5-months' fetus. Histologically, blood vessels were found in the degenerated villi, but there was absolutely no connection with the circulation of the normal placenta, establishing without doubt a binovular pregnancy. The small amount of proliferation of the cell membrane and syncytium was very apparent. The decidua serotina of the mole was profusely infiltrated with leucocytes, while there were none in the normal placenta. This is the first authentic case of the kind.

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(1) Arch. f. Gyn., B. 76, H. 1.
(2) Transactions Naturforscherversammlung in Meran, 1905.

Infection of the Liquor Amnii. Infection of the amniotic fluid must take place either via the vagina with the membranes intact or ruptured, from the abdominal cavity, through the tubes, or from the uterine wall. Hellendall[1] has made a number of experiments upon rabbits to prove these statements. They have as yet not been proven in woman. A trial puncture of the intact membranes may furnish partial proof. The experiments upon the rabbits were all positive.

Withdrawal of the Liquor Amnii. A Cause of Fetal Death and Placental Changes. B. P. Watson[2] has concluded some very interesting experiments on the effect of withdrawing the liquor amnii from the pregnant uteri of rabbits. These animals were taken in various periods of pregnancy and the abdomen opened under antiseptic precautions, the uterine cornua were expressed from the wound and a small syringe needle was passed near the roof of the sac, well away from the placenta into the yolk sac. Especial care was taken to avoid the fetus. All of the liquor amnii was withdrawn and the incision in the abdominal wall closed up. After an interval varying from three to fourteen days the animals were killed. At the necropsy the following facts were determined:

As a result of the withdrawal of the liquor amnii from the yolk sac the fetus died at once, death being due to an arrest of the vitelline and allantoic circulation. This was shown by the fact that each fetus corresponded in development with the period of gestation at which the aspiration was made, and secondly that there was no evidence of degenerative changes either in the fetus or placenta.

The dead fetus and its placenta are retained in utero and the former undergoes degenerative processes and becomes flattened out similar to fetus papyraceus, of occasional occurrence in twins of the human subject. This condition is brought about by a direct compression of the fetus between the uterine wall and the placenta. This condition has not been known in the human being with single pregnancy. The changes which occur in the two parts of the retained placenta, maternal and fetal, are different in nature. The fetal part slowly disintegrates,

(1) Abst. Zentralblatt f. Gyn., No. 41, 1905.
(2) Scottish Med. and Surg. Jour., January, 1906.

the mesoderm becomes invaded by fibrin and the cells of the ectoderm undergo a granular disintegration. There is no tendency to proliferation of the ectoderm after fetal death. The changes in the maternal placenta do not differ in their essential nature from those that occur during its normal development. The placenta becomes detached only when the tissue forming the zone of separation has become sufficiently alternated, and it does so in the same manner as in the normal placenta. Watson's observations definitely prove that the secretion of liquor amnii ceases with the death of the fetus in spite of the fact that the maternal parts show little if any change during the first few days following the death of the fetus. These facts would point to the conclusion that in the rabbit, at least, the amniotic fluid is fetal in origin.

[Such a conclusion is not logical, as many other factors are to be considered. When the fetus dies reciprocal changes between the parent and fetus may cease, and the liquor amnii may result from one of these changes. The Editor has seen aborted ova with amniotic cavities 5 and 10 times the size they should be when compared with the fetus.]

Roentgen Ray in Obstetrics. Freund[1] in his article illustrates the apparatus used by Albers-Schönberg, whereby an x-ray photograph is taken with the woman in the lateral position, which is now considered the most satisfactory. In order to limit the fetal movements, to a certain extent, moderate pressure is exerted upon the uterus. It is sometimes impossible to obviate this disturbing factor.

The x-ray may be utilized to diagnose pregnancy, twin pregnancy, and extrauterin pregnancy. Furthermore, it may be possible to determine the position and attitude of the fetus, the mechanism of labor, and the character, shape, and size of the pelvis.

In differential diagnosis of difficult cases of pregnancy in the second half and tumor it may be very useful, and the same is true in determining life of the child.

Deformities in the fetus and morbid conditions in the various organs of the body may also be revealed.

(1) Deutsche med. Woch., No. 17, 1905.

[The Editor's experience with the x-ray in obstetrics has been very disappointing. In determining the size and shape of the bony pelvis no results of value were obtained; even the full term fetus could seldom be outlined. One patient asserted that abortion resulted from the use of the x-ray for the discovery of a renal calculus.]

Physiologic Experiments on the Isolated Uterus and in the Living. According to experiments conducted by Kurdinowsky[1] upon the uterus *in situ* and isolated, the thermic irritation proved the strongest and most constant of all, especially the relatively sudden variations in temperature. The various thermic irritations acted in a similar manner, producing severe contraction of a tetanic character, the moist heat acting more vigorously than the dry. Cold produced more reaction than warmth, the contractions being of a distinct tetanic nature. Tetanus resulted more frequently after a sudden drop in temperature than after the application of heat. Elevation of the temperature of the blood also increased the contractility of the uterus.

The results obtained in the living animal corresponded to those derived from the isolated uterus. During narcosis the reaction of the uterus to the various stimuli or irritations was not inhibited.

The non-striated muscle fibers of the uterus are capable of contracting after being separated from any nervous influence.

Influence of Asphyxia and Anemia on Uterine Contractions. After experimenting upon the pregnant and non-pregnant uteri of rabbits and also upon uteri that had been pregnant, Kurdinowsky[2] found that the influence of CO_2 as a result of asphyxia was negative in the production of contractions in at least two-thirds of the cases. In 35 out of 37 cases anemia was likewise negative, nor could there be observed any relation between the height of the blood pressure and the severity of the contraction.

Insufficient Oxygen or CO_2 Poisoning. Schücking[3] has made further experiments on the subject of whether the respiratory movements in asphyxia are due to a deficiency

(1) Arch. f. Gyn., B. LXXV, H. 2.
(2) Arch. f. Gyn., B. 76, H. 2.
(3) Zentralblatt f. Gyn., No. 15, 1905.

of oxygen or to the presence of CO_2 in certain amounts. Some years ago he announced that the respiratory movements were due to the accumulation of CO_2 in the blood and not to an insufficient amount of oxygen, and that the death of animals was due to an overproduction of the CO_2.

The experiments carried on by other investigators produced similar results but in a lessened degree, which Schücking attributes to the fact that caustic soda was utilized instead of sodium saccharate or fruktosate, which he recommends because the former produces toxic symptoms very rapidly. Schücking was able to resuscitate asphyxiated dogs and rabbits by means of this alkalin solution injected intravenously. The use of oxygen resulted in failure. He therefore attempted to resuscitate 6 new-born infants which had been given up, by means of an intravenous injection of 200 gms. of a 11 per cent solution of saccharated soda. The results were positive in 4 cases.

[The generally accepted cause for the attempts at respiration on the part of an asphyxiating fetus has been lack of oxygen. Further experiments will be needed before the other explanation can be accepted.—Ed.]

Prevention of Hereditary Syphilis. For the last 26 years Pinard[1] has practiced the same routine treatment in the prevention of hereditary syphilis. He gives the mixed treatment (hydrarg. biniodi et potassii iodidi) for at least six months after the last trace of syphilis in the prospective parent has disappeared. He continues the same treatment, in the woman, during the entire period of pregnancy. The treatment is also carried out prior to each and every pregnancy. His experience in hundreds of cases has demonstrated that the syphilitic under such treatment may procreate vigorous and healthy children. He has not experienced a failure. He very strongly urges physicians to follow the same procedure, whereby much misery and suffering may be spared all who are concerned.

[The Editor has had abundant success in the treatment of such cases with bichlorid of mercury.]

(1) Ann. de Gyn. et Obst., April, 1905.

Decidual Cells in the Cervix. Blumberg[1] reports two cases in which decidual cells were found in the cervical mucosa. They were oftener found in multiple, circumscribed and superficial areas than in those of large extent. They were observed on the surface of the folds of the cervix and in small polyps, as in the one case reported.

They may also be found in the vicinity of the external os, as in the second case, where a portion of the eroded posterior lip was removed.

In the cases thus far observed the placenta was located in the lower segment of the uterus and in consequence of this, a diagnosis of placenta previa might be made whenever the decidual cells are found in a resected portion of an eroded cervix.

[The placenta may be attached to the cervix even as far as the external os, which shows that the cervix may possess some decidual reaction.—Ed.]

The Standard Pelvis and Fetal Head. A committee composed of A. F. A. King, J. Whittridge Williams and E. P. Davis, appointed by the American Gynecological Society to consider uniformity in pelvic and cranial measurements and to construct a hypothetical or standard pelvis and fetal skull, the relative sizes of which would allow of an easy and natural labor, retained the definition of the "pelvic brim diameters" and of the "fetal head diameters" adopted by the Ninth International Congress in 1887. To these measurements two diameters of the inferior strait, namely, the antero-posterior and transverse, and also the external measurements were added.[2] The standard of external pelvic measurements was reported as follows:

	Inches.	Centimeters.
Intercristal	11.00	28.00
Interspinous	10.25	26.00
External conjugate	8.00	20.50
External oblique	8.75	22.50
Bitrochanteric	13.00	32.00

(1) Arch. f. Gyn., B. 75, H. 2.
(2) Surgery, Gynecology and Obstetrics, July, 1905.

The measurements of the pelvic brim were:

	Inches.	Centimeters.
Conjugata vera	4.25	11.00
Conjugata diagonalis	5.00	13.00
Transversa	5.25	13.50
Diagonales obliques	5.00	12.50

Measurements of the pelvic outlet:

	Inches.	Centimeters.
Antero-posterior	3.75 to 4.25	9.00 to 11.00

The larger figures obtain when the coccyx is pushed back.

	Inches.	Centimeters.
Transverse	4.25	11.00
Depth of pelvis:		
Anterior (posterior wall of os pubic)	2.00	5.00
Posterior (straight line from sacral promontory to its tip)	5.00	13.00

Measurements of the fetal head:

	Inches.	Centimeters.
Occipito-mentalis	5.25	13.00
Occipito-frontalis	4.50	11.50
Suboccipito-bregmatica	3.75	9.50
Biparietalis	3.75	9.50
Bitemporalis	3.25	8.00
Trachelo-bregmatic	3.25	8.00

These measurements were obtained by effecting a compromise between the various figures given in the textbooks and by avoiding the use of fractions as far as possible. This report was unanimously adopted.

A New Pelvimeter. Solowij[1] has designed a new pelvimeter for measuring the conjugata vera directly. It is a scissors-shaped affair with two blades shaped so that

(1) Zentralblatt f. Gyn., No. 24, 1905.

when it is introduced the tips rest on the promontory and the inner upper border of the symphysis. The scale is attached near the ends of the handle. It may also be

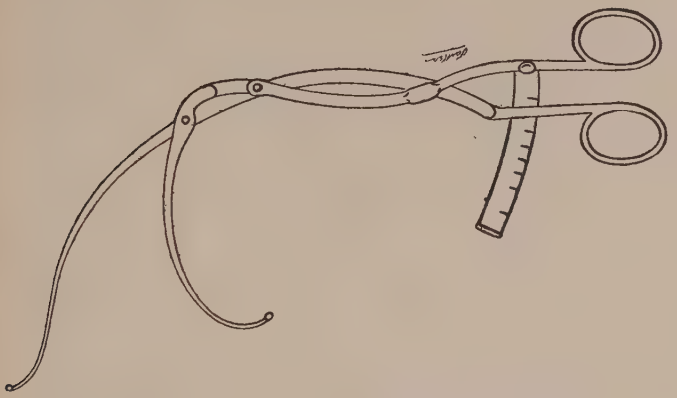

Fig. 1. Solowij's pelvimeter for direct measurement of the conjugata vera.

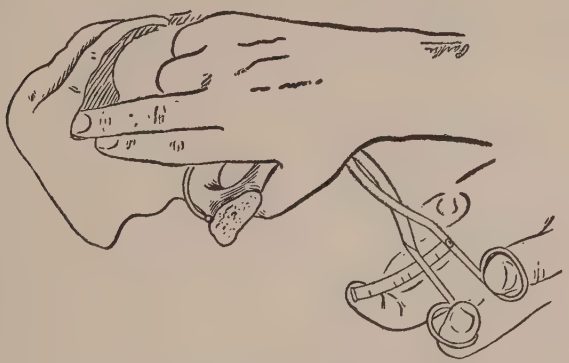

Fig. 2. The application of Solowij's instrument.

readily taken apart. Its advantages are that it permits direct measurement of the conjugata vera, its accuracy, simplicity in handling, no need of anesthetic or assistant,

and the possibility of determining or measuring all grades of shortening of the true conjugata.

Fig. 3. Same as Fig. 2 but in a pelvis so contracted that the two first fingers may subtend the conjugate.

[The idea is not new. See Nitkowsky's Armamentarium Lucinæ. All inventors of obstetric instruments should consult this work before publishing an invention as new.—Ed.]

v. Gaszunski[1] has remodelled his formerly described pelvimeter and is now enabled by taking various internal measurements to get a so-called "pelveogramme" or photograph of the pelvic planes. It is much more important to determine the narrowest diameter of the true pelvis, which he calls the conjugata minima, which is not always the conjugata vera diameter. In determining the true conjugate it is very important to know the upper and lower angles of the symphysis, or, rather, the height of the promontory especially, then the length of the conjugata diagonalis, and least of all the height of the symphysis. He has found that in the average case a deduction of $1\frac{1}{2}$ cm. from the conjugata diagonalis is more correct than the deduction of 2 cm.

The instrument is quite easily handled, without incon-

(1) Zentralblatt f. Gyn., No. 25, 1905.

veniencing the patient to any extent, and enables a rapid determination of the type of pelvis and its peculiarities.

H. Ehrenfest[1] claims that both the obstetrician and general practitioner fail to practice pelvimetry in the vast majority of cases. Most writers and teachers make unjustifiable and exaggerated claims for the utility and accuracy of the various methods of pelvimetry when, as a matter of fact, it is impossible to measure accurately any of the important internal diameters. The external diameter of Baudelocque has decreased in value by test examinations until at the present time but little reliance can be placed upon it. The principles enunciated by its originator are absolutely erroneous. There is no known method that will enable the examiner to determine the exact length to be subtracted from the Baudelocque in order to obtain the conjugata vera in an individual case.

The method of estimating the true conjugate from the diagonal conjugate by introducing the hand into the pelvis, as first suggested by Smellie, is also faulty. If the perineum is normal, it is impossible to touch the sacral promontory with the middle finger, providing the hand and pelvis are normal. This can only be done in contracted pelves [where it is most needed.—Ed.].

In normally shaped pelves it is necessary to deduct from 15 to 18 millimeters from the diagonalis to obtain the vera, whereas, in contracted pelves this deduction varies from 0 to 30 millimeters, according to inclination of the pelvis, the width and thickness of the symphysis pubis, and also the skill and experience of the examiner. The approximate length of the true conjugate can, therefore, only be estimated. The values of the knowledge of the approximate length of the true conjugate is somewhat nullified because it is, as yet, impossible to measure the fetal head, and also as we are unable to determine to what degree the fetal head is able to accommodate itself to the pelvic canal by moulding.

The best pelvimeter, after all, is the history of a normal labor at the normal end of pregnancy. When there is a history of previously difficult or operative deliveries, a careful study will frequently reveal the cause of the

(1) Am. Jour. Obstet., April, 1906.

trouble. The three most common factors in the various deformities are rachitis, osteomalacia and disease of the hip joints. If a careful digital exploration of the pelvic canal is made, followed by the direct use of the internal pelvimeter after Stein, if the perineum is relaxed; or the pelvimeters of Skutsch, Hirst or Neumann-Ehrenfest, if the perineum is firm, and a determining of the length and relations of the interspinous and intercristous diameters to each other, we have done all that is possible to detect the various pelvic deformities.

[The Editor agrees with Ehrenfest that external pelvimetry is all but useless except in cases of exaggerated deformity. Internal mensuration, however, is useful, and an experienced hand can determine quite accurately the conjugata vera, at least, for clinical purposes. By means of the Editor's "outlet pelvimeter" (described in the 1904 Year Book, page 72) one can measure accurately the transverse diameters of the pelvic outlet.]

Antepartum Measurement of the Fetal Head. Wm. S. Stone[1] has practiced examination of the fetal head by external measurement by the Perret cephalometer on a series of forty-one cases. The patient lies in the dorsal position and if the head lies low in the pelvis, it is pushed up by two fingers internally. The occipital and frontal poles of the fetal head are grasped between the two hands and an assistant from below places the ends of the pelvimeter between the terminal phalanges of the middle and ring fingers of the examiner. It is essential that the ends of the pelvimeter go between these fingers, for the reason that one naturally places the longest finger nearest the poles from which the measurements are to be taken. If the pelvimeter tips are placed in front of the middle finger, they are apt to slip and the measurement will be wrong. In this series of forty-one cases, the postpartum and antepartum measurements of the occipito-frontal diameter agreed in twenty-eight instances; in eleven, there was an error of 0.25 cm.; in two, of 0.50 cm. Experiments were also made on the skulls of one hundred new-born children to decide upon the average amount to be deducted from the occipito-frontal to obtain the biparietal diameter. This

(1) Med. Record, Nov. 4, 1905.

average distance was found to be 2.33 cm., but it was found to vary with the size of the head, the difference being less in the smaller heads and more in the larger ones. About 2 cm. is, therefore, to be deducted in heads with an occipito-frontal diameter of less than 11 cm., and 2.50 cm. for those above this limit.

Using this method of measurement in endeavoring to ascertain the best time for inducing premature labor, an increase of the occipito-frontal diameter of 0.75 cm. occurred in three weeks' time; of 3.0 cm. in two months; 1.0 cm. in two weeks; 0.50 cm. in nine days, and 0.50 cm. in twelve days. However, the increase in hardness of the fetal head during the last ten days of pregnancy is the most important factor during that time.

[The use of cephalometry is not as widespread as it deserves to be. Much valuable information is gained by it. Nothing, however, will equal the adjustment of the head to the pelvis by mental action, the "sizing up" of the baby with relation to the pelvis. One must have much experience, however, to be able to employ this method with success.—Ed.]

Phantoma Hystericum. Herz[1] describes a case in which the patient had a slight hemorrhage in her 16th year; 3 months later, another, but more severe, occurred; 8 months later, a third slight hemorrhage. Since the first hemorrhage she suffered from palpitation and dyspnea, and other nervous manifestations. Three months prior to the last hemorrhage, the abdomen gradually became larger until it had a circumference of 37 in. above the umbilicus. Of late there was constipation and an increased pulse rate.

A rectal tube was inserted and the abdomen became decidedly smaller in circumference and reached its normal condition under the bromid treatment.

The case was considered of an hysterical nature associated with the appearance of the period of menstruation.

Intrauterin Skeletonization. Hirschberg[2] reports a case of denudation of the fetal skeleton in a multipara 37 years old. In the fourth month she had pains in the abdomen and back, which were accompanied by a bloody

(1) Wiener med. Woch., No. 5, 1905.
(2) Berliner klin. Woch., No. 8, 1905.

and foul discharge and passage of "pieces." Two months later the uterus again reached the size of a 3 to 4 months' pregnancy. The cervical canal admitted one finger and at the internal os a pointed bone was felt. The uterus was then cleaned out digitally and a mass of bones, soft tissues, and clots were removed. Recovery was uneventful, aside from a slight temperature on the third day.

Hirschberg recommends digital removal of the contents of the uterus and warns against using the curette on account of the danger of perforating the uterus with the bones of the skeleton.

Foreign Bodies in the Uterus. Knoop[1] reports the case of a woman 57 years old who suddenly experienced a foul discharge from the genitals and was admitted to the hospital on the suspicion of carcinoma of the uterus. The menopause occurred ten years previous. She had had but one child (39 years old), had never aborted and her periods had always been regular. The present discharge had existed 2 weeks. While passing the sound into the uterus a grating sensation was felt. Upon curetting it was found to be caused by a very rusty hairpin, $2\frac{1}{2}$ in. long, which the patient says she introduced six years before. Reason was not assigned.

The second case was a primipara 19 years old, attended in labor by a midwife who discovered a large, hard apparent tumor against the sacrum of the child which was presenting by the breech. Upon removal of the same it was found to be a wad of tightly rolled newspaper the size of a walnut. It was 3 to 4 cm. above the external os, but outside the membranes. Patient said that there had been considerable purulent discharge during the whole pregnancy. She had used the wads of paper as a preventative of conception, but had been unable to recover one of them.

Defects in Sons of Same Parentage. A rather unusual and interesting family history is that furnished by Sippel.[2] The father was perfectly healthy and used neither liquor nor tobacco. By his first marriage he had five sons and seven daughters, all born alive and healthy. After the

(1) Zentralblatt f. Gyn., No. 19, 1905.
(2) Zentralb. f. Gyn., No. 15, 1906.

death of the mother he married her sister, who was also healthy. The first child born was a girl, the next four were boys, and the last two, girls. The girls were all healthy and normal physically. The boys all presented some abnormality. The first had a spina bifida which caused his death; the second had a persistent thymus and suffocated soon after birth; the third was still-born but apparently normally developed. The cause of death must have been of internal origin, but could not be determined because an autopsy was not permitted. The fourth suffered from a congenital myxedema, which was cured by the administration of thyroid extract, but it did not cure the idiocy. In the sixth year he had enlarged thymus, which necessitated operation to prevent asphyxia. The fault must have been on the mother's side, since the father had perfect sons with his first wife.

[There seems to be occasionally some relation between the loss of children of one sex and the health of the parents. The Editor knows of a family where every alternate child died in labor without apparent cause. Other curious cases are on record.]

Pregnancy Pains. Schatz[1] holds that there is a center in the medulla for exciting as well as for inhibiting uterin contractions, and that because of the regular periodical suspension of the inhibitory mechanism, uterin contractions occur both in pregnancy and labor. The nearer the patient approaches the end of pregnancy, the closer do the pains of pregnancy simulate the pains of labor and the greater is the difficulty of making a correct diagnosis. It might often happen that the inattentive physician would mistake the pregnancy pains as indicating inertia uteri in labor, and proceed to deliver the fetus or perform some other dangerous operation. Probably all women experience these pregnancy pains in a more or less degree, as can be shown by the almost constant canalization of the lower uterine segment as well as the entrance of the fetal head in the pelvis in primiparæ during the end of gestation. The periodical hemorrhages as well as eclamptic convulsions in many instances coincide in point of time with the periodical pregnancy pains.

(1) Die Deutsche Klinik, IX.

The diagnosis of pregnancy pains at the close of utero-gestation is often difficult, but none the less important. The insensible uterine contractions gradually merge into the sensible pains of the first stage, but in cases of rheumatism of the uterus, painful cicatrices from former operations, neuralgias or disease of the adnexa or vertebræ, these contractions become very painful subjectively. The frequency of pregnancy pains is usually less than those of labor, but exceptions are so common that no reliance can be placed on this sign. The main point of differentiation between these two conditions is the efficiency of the uterin contraction. In labor, because of the special preparation of the soft parts, the effect of the pains is much greater. Rupture of the membranes is less likely to occur after a series of pregnancy pains than during labor, though the cervix may dilate and the liquor amnii escape in the course of pregnancy pains and labor not supervene for days or weeks. Another point of value is the cessation of the pains after twelve to twenty hours, apparently indicating fatigue and exhaustion of the uterus while the mother is still healthy and vigorous.

The earlier the onset of the pains before the expected date of confinement, provided the data are trustworthy, the more probable is the diagnosis. If a small dose of quinin is given at this time it will have no influence upon the pregnancy pains, but it will increase the strength and frequency of pains in labor, though it will not originate uterin contractions. Change of position from the dorsal to a semi-prone posture causes a decrease, and a return to the dorsal position causes an increase of both classes of pains. In regular pains of labor, progress is usually more rapid after the rupture of the membranes if it occurs during a time when the inhibitory mechanism is depressed, but if it occurs during pregnancy, when this influence is active, contractions may not follow for some time, probably not until the next period of depression. If a diagnosis of pregnancy pains has been made and it is desirable to prevent an early expulsion of the fetus, the patient should be put to bed and morphin or codein administered to diminish the uterin contractions. Chloroform and chloral should not be given unless the patient is threatened with eclampsia. The medical attendant should study his patient

carefully and not allow himself to be mistaken by resorting to some operative procedure to save her from the dangers of exhaustion and atony of the uterus when such conditions are not present, nor should he allow himself to be lulled into false security by waiting too long if the case really needs an operative delivery.

Histologic Indices of "Benign" Chorio-epithelioma. The statement made by v. Velits, that the benignity of a chorio-epithelioma may be determined by microscopic examination by the decreased vitality of the Langhans cells, indicated by an absence of or meager mitosis is not accepted by Hörmann,[1] who maintains by a series of arguments that with our present knowledge the absolute benignity or malignity of the chorio-epithelioma cannot be determined.

Tuberculosis and Marriage. In his article on tuberculosis and marriage, Lalesque[2] comes to the conclusion that the tuberculous individual should not marry: (1) Because from a social point of view it would be the source of a contagion for the family and result in the procreation (especially when the woman is afflicted) of weakly, debilitated, and degenerated children susceptible to all kinds of contamination; (2) from an individual point of view, marriage aggravates the disease, especially if it is the woman; (3) the marriageable tuberculous person is the exception and is very rarely seen among the better classes.

Macerated Child That Lived 20 Hours. LaCasse[3] reports a case in a primipara of 26. Her family history was negative. No history of syphilis in the patient or father. The pregnancy was normal aside from a period of hemorrhage during the second to third month. The heart tones were good up to the time the membranes ruptured. A very small amount of liquor amnii of normal consistency was discharged. The child was born spontaneously ten minutes later and the placenta came in forty minutes. The little girl weighed 1,700 gms. (nearly $3\frac{3}{4}$ pounds). Its weight was decidedly out of proportion to that of the placenta, which weighed 530 gms., twice the normal weight, which speaks strongly for syphilis. Other signs

(1) Zeitschrift f. Geb. u. Gyn., B. 54, H. 2.
(2) Journ. de Med. de Bordeaux, May 13, 1906.
(3) Bull. et mém. de la soc. Anat. de Paris, April, 1905.

could not be determined in the placenta. The child was completely macerated. Epidermis could be found only here and there. The color was a deep red. There was no pemphigus on the palms or the soles. The child cried, opened its eyes and seemed very lively, and it lived 20 hours. Necropsy was not permitted.

Statistics of the Tarnier Clinic. Perret[1] furnishes a statistical report of the Tarnier clinic at Paris for the year 1904. The total number of cephalic presentations was 1,559; breech, 45; shoulder, 9; face, 3; twins, 19, and abortions, 53. Intrapartum hemorrhage occurred 13 times and postpartum 121 times. Placenta previa occurred 6 times, prolapse of the cord 13 times, and of the arm 15 times. In 302 cases the urine contained albumin and eclampsia occurred 5 times; 35 were affected with syphilis and 14 with a heart lesion. Hydramnios was observed 32 times. The conjugata vera was 9 cm. once, from 9 to 10.5 cm. 16 times, and contracted from 10.5 upward 91 times. Thirty-one cases of abnormality of the uterus were otherwise observed. The forceps was applied 73 times. Version was performed 17 times, manual removal of the placenta was necessary 22 times, and curettage was performed 75 times. Premature labor was induced 6 times. Craniotomy and Cesarean section were each performed once and perineorrhaphy 73 times. Seventy-six of the women had puerperal infection, 184 had lymphangitis, 79 mastitis, 30 angina, 5 influenza, and 63 had some other disease. Forty-three of the infants suffered from ophthalmia, 2 from broncho-pneumonia, 34 from infection, 4 from erysipelas, and 29 from intestinal complications. Seven children weighed from 1,000 to 1,500 gms., 25 from 1,500 to 2,000 gms., and 79 from 2,000 to 2,500 gms. Forty-two were macerated, 19 died during labor, 33 died during the first 24 hours, and 3 in the following 24 hours. Forty-seven had coryza, 74 erythema of the buttocks, 32 bronchitis, 23 thrush, and 16 syphilis. Fourteen were malformed. Fifty-one other complications, such as cephalhematoma, abscess, etc., were observed. The total maternal morbidity was 21.5 per cent, due to uterin infection 4.6 per cent. The total mortality was 0.4 per cent (7 cases),

(1) L'Obstetrique, March, 1905.

in 2 of which (.12 per cent) the infection was contracted in the hospital. The causes of death were heart failure twice, embolism, eclampsia, bilateral nephritis, infection, and peritonitis following the perforations of the Douglas cul-de-sac once each.

Abortion.

Abortion Statistics. The increasing prevalence of abortion among the French people is amply demonstrated by the statistics collected by Doléris.[1] He collected them from 11 institutions, covering a period of 7 years. In 3 (the Baudelocque, Tarnier, and Port Royal) the average had not increased very much, being between 3 and 4 per cent. In 3 other maternities the average was less than 10 per cent, but in the remaining 5 the number has increased considerably, in one being as high as 18.50 per cent, an increase of 280 per cent.

At the Maternité Boucicaut in Paris the number of abortions had more than trebled in the 7 years and the premature labors had more than doubled, whilst the number of labors at term had increased less than 1 per cent. The mortality of the abortions in 1903 was 4.3 per cent, and in 1904, 2.3 per cent. Doléris attributes this alarming increase in abortions and premature labors to the *"two children"* system and to the pernicious activity of the herbalists and midwives. .

Treatment of Abortion. In the treatment of abortion in general practice, Moebius[2] recommends the use of no instruments other than 2 volsellæ, a medium sized Sims speculum, zinc douche point, uterine packer, and a Fritsch-Bozeman catheter.

One finger's dilatation is often insufficient for digital curettement, on account of the difficulty in removing the loosened products. It is better to re-tampon until the dilatation is sufficient. The preliminary dilatation is secured by first giving a vaginal douche and then packing the uterus with strips of iodoform gauze 3 cm. wide. He packs the cervix with gauze strips 5 cm. in width. The vagina is tamponed with salicylated cotton. If there is no

(1) Ann. des. Gyn. et Obst., April, 1905.
(2) Therap. Monatshefte, Sept., 1905.

fever the packing if left for 48 hours, nor is it to be removed under 24 hours unless the pains are very severe, indicating the loosening of the product. The advantage of this method is that there is no hemorrhage. The colpeurynter does not permit drainage in septic cases, which gauze does permit. In curetting with the fingers all particles must be loosened before withdrawing the hand. They may then be washed out with a weak antiseptic solution, utilizing the zinc douche point until the return flow is clear. Care must be taken not to use too much pressure.

H. J. Boldt[1] claims that all physicians agree that in cases of threatened abortion all measures should be taken to prevent the mishap, but when it is evident that the pregnancy cannot be continued, the uterus should be emptied at the earliest moment consistent with the safety of the patient.

Boldt is inclined to ally himself with that class of physicians who claim that not every woman who has aborted should be curetted, and that many patients who have not been subjected to surgical treatment are in no worse health than those who were operated upon. Such patients do not, in his opinion, run any greater risk of endometritis. Only under special indications, such as elevation of temperature and decomposition of retained products of conception, should the removal of the ovum be effected.

In the treatment of a progressing, inevitable abortion, with closed cervical canal, a hot, antiseptic douche is administered and the vagina is lightly tamponed with iodoform gauze. An oxytocic is also administered internally. The gauze is allowed to remain for twenty-four hours. At the time of its removal, if the uterine contents have not been expelled, but the patient is free from fever and the cervix is patulous, the uterin cavity is packed with nosophen gauze as tightly as can be done without rupturing the fetal sac; the vagina is then tightly tamponed and the patient returned to bed. Usually, after this treatment, everything is expelled. If the patient has lost so much blood that she suffers more or less from anemia and it is deemed inadvisable to await spontaneous expulsion, the

(1) Journal Am. Med. Assoc., March 17, 1906.

finger is passed into the uterin cavity and as much as possible of the contents expelled by compression, aided by pressure over the fundus externally. A placental forceps patterned after that of Winter of Koenigsberg may also be used with advantage. If the hemorrhage is only moderate and the patient is still fever free, no uterin intervention is necessary, but another firm vaginal tampon is inserted and spontaneous expulsion again awaited.

If the ovum is expelled and the bleeding continues and the cervix is contracted, ergot is indicated. If the uterus is not markedly enlarged, hydrochlorid of cotarnin (stypticin) in three-grain doses given every three hours is indicated. If by this treatment the bleeding does not cease, curettement with subsequent irrigation is called for.

In cases of atypical bleeding, several weeks or months following a supposed complete abortion, an immediate investigation of the uterin cavity should be made. Boldt practices the method of discission of the posterior cervical wall as affording the best and most rapid means of dilating the cervix. The posterior cervical wall is split by a scalpel past the level of the internal os, when the uterin cavity will be found accessible to the finger. After the examination and necessary treatment, the incision is closed by a few chromicized catgut sutures.

If the uterus is infected it should be emptied immediately, whether the cervix is dilated or contracted. To dilate the cervix, either steel dilators are employed or two rubber condoms, one placed within the other so as to give them the requisite strength, are tied over the end of a Davidson's syringe and the apparatus after having been inserted into place is ballooned like a Barnes bag. After full dilatation, the uterin cavity is thoroughly emptied and then irrigated with an antiseptic solution. Puerperal tamponade is uncalled for, because its reputed action as a drain is only effected for the first few hours and then it has a tendency to retard the drainage.

[The Editor believes in a waiting policy in the treatment of abortion until the cervix is fully dilated. Tamponade will stop the hemorrhage during the period of expectancy. In general he agrees with the last writer. Regarding the advisability of curetting after all abortions an opinion can only be personal. It requires an immense

personal experience and the collection of thousands of cases to decide either way. The Editor is inclined to curette all cases after abortion. The period of recovery is shortened, involution is hastened, the danger of sepsis averted, also the possibility of a polyp forming or an endometritis being left.]

Criminal Abortion. A case of criminal abortion presenting some points of interest is reported by Schönbeck.[1] The patient was a divorced midwife who had had three normal labors. Last menses July 17. Entered the hospital October 6 with chills and temperature of 103.3, pulse 120. Several days before, a hemorrhage, lasting one hour, which she had stopped by tamponing the vagina with cotton. Internal examination revealed no hemorrhage and os closed. A tent was introduced and the abortion completed the following day. Her condition was somewhat improved the next day, but the following day rapidly became worse. Abdomen very tender. Tympanites, dry tongue, rapid pulse and temperature nearly normal. Death occurred on the 11th of October, 5 days after admission.

The day before she died the patient said that she had introduced a catheter, soaked in lysol, into the uterus, but it had suddenly escaped her. The post-mortem revealed the broken catheter under the intestines, a hand breadth below the liver. A small opening was found on the posterior surface of the uterus on a level with the internal os which communicated with the cervical canal.

Hydatid Mole. H. C. Martin[2] reports a patient suffering from hyperemesis gravidarum who had various irregular hemorrhages from the vagina for a month, but no hemorrhage had been copious. There was no trace of vesicles discovered. After a severe hemorrhage the woman was put under chloroform and the uterus cleaned out. The uterin contents measured about three and a half pints; the vesicles were very numerous but small. The placenta was thin and small, and not a trace of an embryo could be found, although careful search was made several times.

Septic Abortion. Jonas[3] reports a case of septic abortion, the result of fright, which had been improperly

(1) Zentralb. f. Gyn., No. 49, 1905.
(2) Edinburgh Med. Jour., June, 1905.
(3) Interstate Med. Journ., Feb., 1905.

attended a week before entering the hospital. The patient was in a very septic condition at the time of admission. A number of small shreds were removed and 120 c.c. of antistreptococcic serum were injected in doses of 20 c.c. every 4 hours after the discovery of streptococci in the lochia. One ounce of ung. Credé was exhibited twice daily, but with no apparent influence. The temperature and pulse gradually increased and dyspnea became more marked. On the 9th day the spleen was decidedly enlarged and the leucocytes numbered 20,000. The patient was carefully examined every day for evidence of localization of the process and on the 11th day a fluctuating mass was discovered high up in the vaginal vault between the uterus and bladder. It was deemed wiser to incise this abscess by an extra-peritoneal incision just above the inner half of Poupart's ligament. A half ounce of pus was removed and the next day the temperature dropped from 105.6° to 101°, but the following day it again rose to 105°. The pulse went up from 120 to 140. Dyspnea was very marked, the respirations being between 50 and 60.

An empyema was then discovered and a pint of pus containing the long chain streptococcus was removed by aspiration at two different times.

Vigorous stimulation and careful nursing finally won out and the patient left the hospital two months after admission in good condition.

Tetanus Post Abortum. In a case reported by Seegert[1] an XI-para aborted in the third month and was curetted digitally. She had no temperature at the time and had not been tamponed. Seven days after abortion twitchings were observed in the muscles of the jaw, which soon resulted in trismus. Small particles of tissue were removed from the uterus with a curette and examined bacteriologically. Twenty-one hours after the twitchings began, 100 units of Behring's tetanus antitoxin were injected and repeated the next day, but her condition became worse and opisthotonos also was present. On the third day her temperature went up to 107.6° and the pulse became very rapid and barely perceptible, death soon intervening. The

(1) Zentralb. f. Gyn., No. 14, 1906.

necropsy was negative, but the bacteriologic examination of the parts removed with the curette revealed spores of the tetanus bacillus which produced the typical reaction when injected into mice. Seegert suggests vaginal hysterectomy plus the use of antitoxin in such cases.

Endometritis Post Abortum in an Eleven-year-old Girl. Schütze[1] reports a very rare occurrence, an endometritis post abortum in a girl 11 years old. For 3 months she suffered from the usual nausea and vomiting of pregnancy, so much so that she was unable to attend school. During the second month the first hemorrhages appeared from the genitals. The mother said that a "piece of flesh" had also been passed. Three weeks later the second hemorrhage occurred, which lasted 10 days. At this time another piece was discharged. She had two more hemorrhages in the next six weeks. They were so severe that an internal examination was determined upon. Nothing abnormal was found until the speculum was introduced and a bloody discharge observed coming from the cervix (up to this time an abortion had not been suspected). The uterus was curetted and a mass of grayish red, soft pieces mixed with old and fresh blood were removed. Microscopic examination of the same revealed positive evidence of pregnancy, such as decidua graviditatis, etc. Chorionic villi were not found.

[In the absence of chorionic villi a diagnosis of pregnancy is always open to question.—Ed.]

Missed Abortion. Herz[2] reports a case of missed abortion occurring in a primipara. Thirteen months after the last menses she was seized with severe cramps and chill, accompanied by a bloody discharge. After sufficient dilatation a fleshy mole was removed.

The first three months of this period were marked by the usual signs and symptoms of pregnancy, after which her health was excellent.

At the time of operation the membranes were still intact and the temperature was above 103°.

[Missed abortion is a not uncommon condition. The diagnosis can usually be made. The uterus is smaller

(1) Zentralblatt f. Gyn., No. 16, 1905.
(2) Wien. med. Woch., No. 7, 1905.

than it should be at the time of the supposed pregnancy and has a peculiar feel, not like a normal pregnant uterus. In cases of doubt the woman is to be examined every 4 weeks and the decreasing size of the uterus will assure the diagnosis.—Ed.]

Menstruation after Abortion. In order to determine the time menstruation usually occurs after abortion, Engländer[1] examined 57 women after abortion and found that the majority (64.9 per cent) menstruated four weeks after abortion. Fourteen per cent menstruated during the 5th week, 10.5 per cent at the end of 5 weeks, 3.5 per cent during the 6th week, and 7 per cent at the end of 6 weeks.

Only so-called normal abortions were considered, *i. e.,* when the duration of flow of lochia was short, or when the uterine mucosa was not injured, as after retention of remnants of the ovum, etc. Abnormal processes, such as fever, inflammatory conditions in and about the uterus, decomposing processes in the mucosa, and puerperal fever delay menstruation.

The above establishes an important criterion for physicians in treatment of cases in which, after complete cessation of the flow, hemorrhage appears at the end of four weeks. It is to be considered a normal condition and incorrect for physicians to curette, etc., at such a time. If hemorrhages have appeared at intervals during this period, then an incomplete abortion may be assumed.

Extra-Uterine Pregnancy.

The Corroding Process of the Ovum in its Implantation in the Fallopian Tube. Recent biologic studies of the implantation of the ovum upon the mucosa, says J. R. Goffe,[2] have shed more light on the obscure cases of ectopic gestation. It is known, for instance, that certain tissues have the property of attacking and destroying other tissues with which they may come in contact. This characteristic has been found true, especially of the tissues of embryos of the lower animals and, although it has not yet been definitely proved, in all probability is true also of the

(1) Zentralb. f. Gyn., No. 7, 1906.
(2) Journal Am. Med. Assoc., Nov. 4, 1905.

human embryo. This process in the lower animals is described as follows: The ectoderm of the chorion undergoes a marked proliferation of cells whereby some of them are distinguished by their large size and are called by Minot the trophoderm. Wherever these trophodermic cells come in contact with the uterin or tubal mucosa destructive changes occur in the latter and the ovum lodges itself in the cavities thus formed. Later these large cells degenerate and the cavities are filled by proliferations or papillary outgrowths from the chorionic mesoderm and thus the villi are first formed.

In cases where the ovum is implanted in the thin Fallopian tube, this corrosive action may extend entirely through the tubal wall and a rupture into the peritoneal cavity would then occur. In a case of this character operated upon a small pinhole perforation was found on the posterior surface of the tube and this opening was filled by a small blood clot. The interior of the affected tube showed no sign of placenta or chorionic villi. The ovum had eroded its way directly through the tubal wall and had given rise to frequent if not a continuous hemorrhage. There was a considerable quantity of free blood and clots in the peritoneal cavity.

[F. Neugebauer[1] reported a case of fatal intra-peritoneal hemorrhage from rupture of the tube in an early extra-uterin pregnancy.]

Differential Diagnosis of Extrauterin Pregnancy. E. H. Wells[2] classifies his diagnosis of ectopic gestation under five heads. In cases with a clear history and typical vaginal findings a correct diagnosis may be readily made, but in the atypical forms serious difficulty may be experienced.

I. Early, unruptured. When diagnosis is in doubt, the following conditions have to be differentiated: Abortion, anteflexion of the gravid uterus, retroflexion of the gravid uterus, pyosalpinx, hydrosalpinx, or small ovarian cyst of one side with early abortion or temporary amenorrhea, myoma, sarcoma and carcinoma of the tube and ovarian neoplasms.

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(1) Zeit f. Gyn., 1905.
(2) Med. Record, Nov. 25, 1905.

II. Early, with rupture and free hemorrhage. Here, we should also consider acute poisoning, attempted abortion, acute gonorrheal endometritis, rupture of a pregnant rudimentary horn in a bicornate uterus, rupture or perforation of the stomach, appendix or other abdominal viscus when not traumatic, and small tumors of the ovaries or tubes with twisted pedicles.

III. Early, with rupture, extra-peritoneal bleeding and hematocele. The history is the same as in the preceding cases, but the signs of hemorrhage are less severe. We must differentiate the condition from a hematocele due to rupture of a vessel in the broad ligament, pelvic cellulitis or peritonitis, pelvic abscess, uterin myoma, malignant disease of the tube or broad ligament and cornual pregnancy.

IV. Advanced with living child. This is to be differentiated from tuboabdominal pregnancy, tubo-ligamentary or subperitoneal abdominal pregnancy, normal pregnancy and pregnancy in a rudimentary horn.

V. Near or after term, child dead. The condition is most apt to be mistaken for a malignant ovarian tumor particularly, as well as for tuberculosis of the peritoneum or fibro-cyst of the uterus.

De Snoo[1] tabulates and reports 51 cases of extrauterin pregnancy that occurred mostly in Kouwer's clinic at Utrecht.

Tubal abortion occurred 9 times, rupture 10 times, retrouterin hematocele 21 times, peritubarian 2 times, intraligamentary hematoma 2 times (once with a living child), ovarian pregnancy once, repeated pregnancy of the tube once, double tubal pregnancy (both tubes) once, and extra and intra uterin pregnancy combined once. The uterus was curetted in one case, but no signs of pregnancy could be found in the scrapings microscopically.

The writer takes a very conservative standpoint in reference to operating at once on account of the uncertainty of diagnosis and the danger of secondary hemorrhage. He recommends entrance into the hospital, rest in bed, ice, opium, eventually infusions and enemas. He also holds that the chances of the child living are not so small as

(1) Abst. Zentralb. f. Gyn., No. 30, 1905.

heretofore believed nor are deformities to be feared so much.

The hematocele is to be operated only in case that the hemorrhages repeatedly occur, when they do not absorb after weeks of rest and treatment, and in cases of infection. The average time of treatment of 17 cases was 30½ days. Sounding and puncture are not recommended as methods of diagnosis.

Diagnosis and Treatment of Extrauterin Pregnancy. One hundred cases of extrauterin pregnancy observed in the Moabit Hospital (Berlin) are analyzed by Zuntz.[1] Incorrect diagnoses were not infrequent. Five cases had been curetted outside the hospital and twice a curettage was performed in the hospital on the assumption that the case was one of incomplete abortion. Frequently the diagnosis of a parametritic exudate is made and on the other hand a diagnosis of tubal pregnancy is made when there is a tumor of the appendages present. An important aid in diagnosis is puncture with the needle. The presence of a hematocele is thus readily determined. The question of operation is to be decided on the character of the fluid; if purulent or of bad odor, it should be performed. If the ovum is still active, operation is also indicated. Laparotomy should not be performed immediately if there is fresh hemorrhage in all cases outside the hospital. Injections of camphor and salt solution should be given and if no improvement in a few hours the patient must then be transferred to the hospital.

A contribution to the study of the diagnosis and treatment of *ectopic pregnancy* is furnished by Vineberg[1] in a report of 53 cases operated by him during the last seven years, in which certain fixed ideas have been exploded by the statistics furnished. One of them was that a long period of sterility usually preceded the ectopic pregnancy. The ages of the patients varied from 22 to 41; 25 were under 30; 15 had given birth to one child; 11 had borne four or more children; 6 had never been pregnant before. Of these one was married 7 months; one, 2 years; two, 3 years; one, 4 years, and one, 12 years. In the last case there was a simultaneous uterin and extrauterin preg-

(1) Heilkunde, July, 1905.

nancy. The period intervening between the last normal and the abnormal pregnancy varied from 4 months to 16 years. In 16 cases (31 per cent) the period was only 2 years or less.

Another idea disproved was that inflammatory disease of the tubes is frequently the cause of this condition. No such history could be elicited in over half the cases.

The three cardinal symptoms of ectopic pregnancy are: Amenorrhea of longer or shorter duration, irregular uterin bleeding, and abdominal pain.

The period of amenorrhea (counting from the time the patient should have menstruated) varied from 6 to 14 days in 20 cases. In 13 cases there was no such period, making 33 cases (62 per cent) in which the period was of very short duration.

A distinction between the color of the hemorrhage of an extrauterin pregnancy and a uterin abortion cannot be made, though the scanty, irregular hemorrhage of ectopic pregnancy is an important diagnostic point. As a rule, the statement by the patient of the expulsion or non-expulsion of a decidual cast is of no aid in the diagnosis.

In the treatment the abdominal route was followed in 50 of the 53 cases. The uterus was removed three times, including a case of abdominal pregnancy.

The right tube was affected in 26 cases; the left in 17 cases; in 10 the location had not been mentioned.

In 16 cases there was a moderate quantity of free blood in the peritoneal cavity; in 14 cases the quantity was very large, the abdomen being greatly distended. There was but one death in the series.

The writer favors removing as much of the accumulated blood as possible and taking sufficient time (even in the severest cases) to ascertain whether the bleeding is absolutely stopped or not.

X-Ray Diagnosis of Extra-Uterin Pregnancy. The second case in the literature is reported by Lichtenstein.[1] The difficulty in securing an x-ray picture is due, to a great extent, to the fluids or tissues containing considerable

(1) Muench. med. Woch., No. 11, 1906.

fluid, such as the placenta, uterus, etc. For the same reason it is difficult to secure a good plate of the head.

The patient entered the hospital in the tenth month of pregnancy. She had been having hemorrhages from the uterus during the last ten weeks. Fetal movements had ceased twelve weeks before. External examination revealed a uterus extending two fingers above the navel. The fetal small parts were felt exceptionally plainly. There was no uterin or funic souffle. Heart tones were not heard. Vaginal examination revealed the uterus of normal size situated high up. In front an indistinct mass was felt. An x-ray exposure of $1\frac{3}{4}$ minutes was taken. The maternal pelvis was plainly observed. To the right there could be seen two fetal bones united at an angle, representing the thigh and leg. Three fine white stripes could be seen over the left iliac bone, which represented ribs. Other fetal parts could not be made out.

Laparotomy revealed a mummified fetus lying in the oblique left sacro-posterior position. An x-ray picture of the fetus, after removal, lying in the same position it lay in the uterus, was taken to corroborate the diagnosis. The plate revealed the same picture.

An exposure of an extrauterin pregnancy is more satisfactory, because the tissues intervening are thinner and less succulent, the fetal sac contains less fluid or practically none, and the placenta is rarely situated between the fetus and the plate.

C. P. Noble[1] has operated on 91 cases of ectopic gestation, 89 by abdominal section and 4 by the vaginal route; two cases requiring both routes.

In 20 cases, the opposite tube was inflamed and hematosalpinx, hydrosalpinx and salpingitis were found, but no instance of pyosalpinx. This fact tends to prove the assertion that mild infections of the tube during the course of pregnancy are prominent causes of ectopic gestation. The mechanical causes of the arrest of the ovum in the tube, due to infection of the tube, congenital defects or distortions play an important part in the etiology of this condition. In this series, seven cases are reported as unruptured, 13 as ruptured and 71 as having tubal abortion.

(1) N. Y. Med. Jour., Dec. 2, 1905.

Noble believes in a careful study of the cases early so as to be able to make a correct diagnosis while the patient is in a good condition and in an operation as soon as the diagnosis is made. Light anesthesia, rapidity in operating, the ligation and removal of the affected appendages, the removal of the larger masses of blood clots manually, the removal of a portion of the free blood in the peritoneal cavity by irrigation with normal salt solution and the rapid closure of the abdomen without drainage are the principal points of the operation. Complete surgical anesthesia, refinement in operative technic and the additional handling of the viscera all decrease the patient's chances for recovery. Tubal abortion demands immediate operation, the removal of the affected appendages, removal of blood clots, toilet of the peritoneum and closure of the abdominal wound without drainage. If the opposite appendage, or the appendix is diseased, removal of the affected tissues is called for, providing the patient's condition is such as to warrant the further operation.

S. M. Brickner,[1] from a thorough study of thirty cases of ectopic pregnancy, concludes that sterility does not necessarily precede the development of the condition and that if it does exist, its cause is often the same as that of the misplaced pregnancy. The main characteristic of the hemorrhage is its marked irregularity. It may be constant or intermittent and its character or profuseness has no relation to the severity of the disease. Generally, the hemorrhage is not profuse. The uterin hemorrhage has no apparent connection with the death of the fetus. Tenderness on palpation of the mass adjacent to the uterus is of great diagnostic value when taken in conjunction with the history and other pelvic findings. Not one, but many elements may act as causative factors of ectopic gestation. It is likely that atavistic tendencies, congenital or acquired anomalies, pelvic inflammations, ovarian and tubal disease all play a rôle in certain cases, but none of these factors is sufficient to explain all the cases.

H. M. Lee[2] reports a rather *unusual treatment* for his case of ectopic gestation. The pregnancy was of six weeks' duration and was found to have occurred in the right wall

(1) Medical News, Aug. 12, 1905.
(2) Am. Jour. Med. Sci., July, 1905.

of the uterus—the interstitial variety. The diagnosis was made and the operation performed prior to rupture of the sac. After the abdominal wall was opened and the exact site of the sac determined, the uterus was dilated to a diameter of 1¼ inches and a curved dressing forceps was passed from the uterin cavity through the intervening wall into the gestation sac, guided by the hand in the abdominal cavity. A rent of about one inch was made in the uterin wall. Pressure on the gestation sac forced the contents into the uterin cavity. Thorough irrigation, uterin curettement and packing of the sac closed the operation. The tube and ovary of the affected side were left. The patient recovered perfectly and later showed but slight signs of her former condition.

An Unusual Pulse Phenomenon after Rupture of a Tubal Pregnancy. Busalla[1] reports a case of ruptured tubal pregnancy, accompanied by internal hemorrhage, in which the pulse betrayed a peculiar phenomenon. The patient was a III-para, whose menses and previous pregnancies had been normal. At the end of the second month of pregnancy she was suddenly seized with an attack of very severe pain in the left side of the abdomen, fainting spells, and vomiting. The administration of 15 drops of Tr. opii sufficed to bring about improvement, but a few hours later her condition became worse, especially the anemia. At the time of admission to the hospital her pulse was only 56, soft, regular, and of fair volume. The percussatory and palpatory findings indicated some internal hemorrhage, hence laparotomy was performed, in spite of the favorable heart action. About two quarts of fluid and clotted blood were removed. The rupture, about the size of a quarter, had taken place in the left tube. Puerperium was normal. Busalla is unable to explain the bradycardia, but thinks it may have been a reflex irritation of the vagus through disturbance of the peritoneum.

[The Editor has seen several cases of slow pulse in severe hemorrhage. It is hard to explain.]

Twin Tubal Pregnancy, Ova Unequal Size. A very rare and interesting case is that reported by Saniter.[2] The pa-

(1) Deutsche med. Woch., No. 21, 1906.
(2) Zeitsch. f. Gyn. u. Geb., B. 55.

tient was 39 years old, II-para. Her first pregnancy occurred 9 years previously. Menstrual periods were always regular. Last one 49 days ago. Had had hemorrhages for last 12 days; 10 days ago a fainting spell; since then pains. Pulse and temperature normal. Her condition not being improved any after 11 days of rest in bed, she was curetted and some decidual tissue was removed. A few hours later she experienced another fainting spell. The following day laparotomy was performed and the right tube was removed. The abdominal cavity contained fresh blood. Careful examination of the preparation revealed two ova in the tube, which were of different sizes. The smaller one was about 2-3 cm. from the uterus and the larger one protruded from the fimbriated end about 2 cm. distant from the smaller one. It was about the size of a hen's egg and contained a fetus 4 cm. long. The other ovum measured 1-2 cm. in diameter. Both were ruptured. The smaller one revealed a small puncture, on the upper surface, through which protruded a small bundle of villi, while the larger one had a gaping tear on its anterior surface. The ovary contained a large corpus luteum and a small corpus albicans. The left ovary was not examined for the presence of a corpus luteum because at the time of the operation there had been no suspicion of a twin pregnancy.

Saniter is of the opinion that the case was one of a binovular twin pregnancy and that the first fainting spell was the result of the rupture of the proximal ovum, which then ceased to grow and began to undergo absorption, whereas the ovum at the fimbriated end continued to grow until three weeks later, when it ruptured and caused the second fainting spell. This is the twentieth case of two ova in one tube reported.

Tubal Pregnancy. C. H. Whiteford[1] details 3 cases of a severe grade, 2 patients dying.

The first case showed marked dullness on the left, not affected by change of position. Vaginal examination disclosed a uterus of normal size close behind the pubis. A smooth and tender mass was found in the cul-de-sac of Douglas. Operation revealed a rupture in the center of the right tube. Both tube and ovary were removed; 5½

(1) British Med. Jour., June 2, 1906.

pints of salt solution were left in the peritoneal cavity, and the operation concluded rapidly, as the condition of the patient became desperate. Eight and a half pints of hot saline solution, together with 1 ounce of brandy, were immediately injected into the veins. Recovery was attributed to the large amount of salt solution used (1¾ gallons) and to the stimulation of the emunctories, as was evidenced by the passage of 4 pints of urine during the first 24 hours.

The second patient was seized with abdominal pain, faintness and convulsions. When seen she had a blanched appearance, distended abdomen and a thready pulse. A diagnosis of ruptured tubal pregnancy with free hemorrhage into the peritoneal cavity was made, but the patient died before an operation could be performed.

The third case, because of improper medical care, was allowed to continue for 4 to 5 months of pregnancy before a correct diagnosis was made. At this time a round tense tumor, the size of a cocoanut, was found on the left side rising the level of the navel and extending for 2 in. to the right of the median line. Vaginal examination showed the uterus to be pressed downwards and to the right by the swelling, which was continuous with the tumor in the abdomen. A diagnosis was made of a rupture of a pregnant tube with continued development of the pregnancy. Operation revealed a distended, very tense broad ligament and a soft uterus nearly twice the normal size. The fetal sac was opened and a living fetus of 4 to 5 months' development was extracted. The cord was ligated and dropped back into the sac. The sac was then packed. Its edges were sutured to the abdominal parietes by mass sutures of silkworm gut. Four pints of hot saline solution and ½ oz. of brandy were injected into the veins, but in spite of all stimulating treatment the patient died 5 hours after operation.

Michin[1] reports a case of *extrauterin pregnancy at term*. The patient was 38 years old and a IV-para. The last labor was 13 years before. The patient entered the hospital on account of enlargement of the abdomen and pains in the back and abdomen. Examination revealed extra-

(1) Abst. Zentralb. f. Gyn., No. 22, 1906.

uterin pregnancy of about the eighth month with a living fetus. The patient experienced pain the first time at the end of the third month, after which there was an interval of 6 weeks in which she was free from pain. For the last 2 or 3 weeks there had been painful urination. Owing to the fact that the pregnancy was nearly at term and the patient not suffering especially, it was decided to postpone the laparotomy. This was finally performed after the patient had severe pains in the abdomen and also during urination and defecation. A living child, weighing 2,420 gms. (a little over 5 pounds) and 17 in. long was removed. The fetal sac was free and intact. Patient recovered promptly.

Ruptured Interstitial Pregnancy. W. G. Nash[1] reports a case of ruptured interstitial pregnancy, the rupture taking place at the fifteenth week, probably due to the attempt to induce abortion by using the handle of a paint brush. A few hours after this attempt the patient was seized with severe pain and vomiting. Anemia, rapid pulse, distended abdomen, dulness in the flanks, a soft cervix and a patulous os uteri cleared up the diagnosis of ruptured ectopic pregnancy. Hysterectomy was immediately carried out, but the vomiting returned and the patient died on the second day. The uterus had developed asymmetrically, the left side being larger. Apparently the ovum became delayed in the left Fallopian tube and as it developed caused a hypertrophy of the uterin tissue above the entrance of the tube. The uterin wall was thinnest on the abdominal side of the gestation sac, so that when rupture took place, it occurred into the peritoneal cavity. The fetus was found free in the abdomen, but there was no separation of the decidua from the uterin wall.

Tuboovarian Pregnancy. Koenig[2] reports a case of tuboovarian pregnancy occurring in a II-para, aged 27 years. Menstrual history normal. First child born 7 years before. No complications. Puerperium normal. No abortions. At the beginning of this pregnancy menses were irregular and continued one time for several weeks. They were then absent for six months. In the meantime the

(1) Lancet, Aug. 26, 1905.
(2) Zentralb. f. Gyn., No. 42, 1905.

patient perceived some movements in the abdomen, but they were so slight and so different from those of the first pregnancy that she did not think herself pregnant. Finally she passed dark clotted blood for a period of eight days, with the usual menstrual pains. This was ten months from the last *regular* menstruation, though the menses did not cease entirely until five months later. The abdomen did not increase to the usual size. At the end of a year her condition had become grave, having lost about 30 pounds in weight. Abdominal examination revealed an immovable tumor, with fluctuating areas, that reached to the height of an 8 months' uterus. A probable diagnosis of a "polycystoma ovarii" was made. Laparotomy was performed and a macerated fetus was removed from a sac which involved the right tube and ovary. Histologic examination revealed ovarian tissue in the wall of the sac, making the diagnosis of tuboovarian pregnancy a most probably correct one.

Extra- and Intra-Uterin Pregnancy Combined. Neugebauer[1] has collected 155 cases of extra- and intrauterin pregnancy combined. In 12 cases the final results were not stated; 96 women recovered, 47 died, a mortality of 30 per cent. Laparotomy was performed 78 times. Two of the cases were observed by Neugebauer himself. In the first case, the patient was a IV-para, 32 years old. Previous history negative, excepting one abortion. She was in the third month of pregnancy and while returning from a dance in a carriage was seized with an almost uncontrollable desire to urinate. While preparing for bed she was seized with very severe pain in the abdomen, vomiting and diarrhea. The physician first called in made a diagnosis of ptomain poisoning, because she had eaten some mayonnaise, fish, etc., at the late supper. He applied hot cloths and injected caffein. The writer was called and reached the house about two hours after the beginning of the attack. He found the patient collapsed, colorless and pulseless, but still conscious and suffering great pain. Examination revealed an intrauterin pregnancy, but intact, and the source of the internal hemorrhage could not be determined. Her condition was such that active measures

(1) Zentralb. f. Gyn., No. 46, 1905.

were held in abeyance and she died a half hour later. The autopsy revealed the abdomen literally *filled* with blood. The right tube was slightly thickened near the uterus (this could not be ascertained *intra vitam*) and a portion of the ovum protruded from it through a small slit in the anterior wall. It was estimated to be of about 17 days' growth. In the uterus, an intact product of about 8-10 weeks was found. No cause for the implantation of the ovum could be determined, since there was no diseased condition present. It was interesting to note that the *left* ovary contained two corpora lutea of unequal size. It is assumed that they migrated to the right fimbriated extremity. The question of whether the two ova were impregnated at one coitus or not is difficult to determine, but the writer (N.) believes that it is a case of superfetation. The very rapid progress (less than 3 hours) and the difficulty in making a correct diagnosis are to be especially noted.

The second case was a primipara, 22 years old, two months pregnant, who was found vomiting and in collapse. There was a discharge of blood from the uterus. Treatment was expectant. The following day she aborted, was curetted the next day and insisted on returning to her home the following day. She improved rapidly, but 8 days later again collapsed. Laparotomy performed the next day, revealed a tubal abortion with a large hematoma in the cul-de-sac of Douglas.

H. N. Vineberg[1] reports two cases of combined extra-uterin and intrauterin gestation and states that in every case of uterin miscarriage showing abnormal symptoms after emptying the uterus, the probability of an associated extrauterin pregnancy should be considered and likewise after an operative case of extrauterin pregnancy, should there be an undue persistence of the uterin bleeding, one should think of an associated intrauterin pregnancy that has been overlooked.

The first patient complained of severe pelvic pain after a sterile period of 13 years. When the intrauterin pregnancy was about six or seven weeks old, a curettement was performed, but without material benefit to the patient. Nearly four weeks later the patient collapsed and was

(1) N. Y. Med. Jour., Feb. 24, 1906.

found in an alarming condition. The operation disclosed an extrauterin pregnancy, with a fetus corresponding to the tenth week. The mother made a slow but satisfactory recovery.

The second patient was curetted, but it was suspected at the time that there was an extrauterin sac. The material from the uterus corresponded to a pregnancy of four or five weeks. In order to settle the question a posterior vaginal incision was made and rupture of an ectopic sac was confirmed. The tube was not larger than the index finger, and the pregnancy had occurred in the isthmus portion, at which part the rupture had taken place. This patient made a rapid recovery.

[The Editor would emphasize the possibility that an extrauterin sac containing blood is not always an ectopic gestation. Hematosalpinx, rupture of varicose veins in the broad ligaments, some neoplasms of the ovaries, etc., may give rise to accumulations of blood in the pelvis. Without the microscopic demonstration of villi or fetal parts, in certain cases of pelvic hematomata, the diagnosis of extrauterin pregnancy is impossible. One should not call all pelvic hematomata or hematoceles, ectopic pregnancies.]

Secondary Abdominal Pregnancy at Term. Seeligmann[1] reports a very rare case of secondary abdominal pregnancy, which arrived at term. The patient was a multipara, whose previous labors were all normal. Her family history was negative, except that laparotomy had been performed on her mother for tuberculosis of the peritoneum. At about the end of the second month of pregnancy the patient was taken severely ill, under the clinical picture of a ruptured extrauterin pregnancy. Her condition was so much improved the next day that operation was deferred and a subsequent examination under anesthesia was negative, other than that the uterus was enlarged to a size corresponding to that period of pregnancy (two months). The patient suffered a great deal of discomfort in the following months and the abdomen continued to enlarge. The pain was especially severe in the vicinity of the liver and was accompanied by icterus for a long time. At the end of

(1) Deutsche med. Woch., No. 22, 1906.

nine months the fetal movements ceased and the heart tones were no longer heard. It was not until five weeks later, that laparotomy was performed, the diagnosis having been but recently made by dilating the cervix after pieces of decidua had been cast off, and finding the uterus enlarged but slightly more than seven months previously and empty. Upon opening the abdomen the sac was found to extend from the liver into the pelvis. The uterus and the adnexa were found perfectly free. A macerated fetus 22½ in. long and weighing ten pounds was removed. The placenta was chiefly attached to the lower surface of the liver and gall-bladder and only a small part was attached to the parietal peritoneum of the abdominal wall of the right hypochondrium. An attempt to remove the same resulted in a very profuse hemorrhage which necessitated packing the sac in its entirety to check it. The tampon was removed at the end of 48 hours. The hemorrhage had been controlled and there was no fever for several days. The cavity was irrigated daily with saline solution and the drain of iodoform gauze renewed. At the end of two weeks the putrefaction had become very marked and the temperature rose to 103°. The portion of placenta located on the peritoneum was removed manually, but the attempt to remove that part attached to the liver provoked another severe hemorrhage, which was controlled by a tampon. The temperature dropped, but in the course of a week rose to 104°. The remainder of the placenta was then successfully removed. The temperature became normal in a few days and the patient was discharged from the hospital at the end of six weeks.

Gangolphe[1] reports an interesting case of extra- and intra-uterin pregnancy in which the former was diagnosed, but the latter was not recognized until abortion occurred. The patient was a IX-para, 40 years old. She gave birth to triplets at her second labor. Menstrual history was negative. During the last pregnancy she was compelled to seek medical assistance on account of a severe flow with pain and the passage of clots. Internal examination revealed a mass bulging into the vagina, so an incision was made and a ruptured tubal pregnancy with many large

(1) Lyon Méd., Feb. 26, 1905.

clots was found. Nine days later the uterin pregnancy terminated spontaneously with the passage of a fetus of about 4 months' growth.

Abdominal Pregnancy, Persisting Beyond the Period of Normal Pregnancy. C. A. L. Reed[1] reports three cases of prolonged abdominal pregnancy and from them he draws the following conclusions: The policy of waiting for the formation of innocuous lithopedia is only valid when the pregnancy is an intraperitoneal one and is injudicious when the fetus is developed extraperitoneally; that is, in the broad ligament. The difficult problem in all of the early operations has been the disposition of the placenta and the hemorrhage is apt to be severe when ligation of the vessels cannot be safely used and in the event of placental enucleation, hemostasis must be secured by pressure. It is, therefore, wiser, in the absence of active symptoms of infection, etc., to wait two or three months before attempting the removal of the extraperitoneal gestation when its vascularity has usually ceased and the enucleation in whole or in part can be safely effected. Further delay is dangerous, as a low grade of sepsis is likely and the bones of the fetus are apt to act as local irritants.

The tendency to lithopedion formation is greater in the intraperitoneal variety of gestation, although, as pointed out by Tait, the peritoneum has the ability to digest the fetus in the more gelatinous stages of its development.

In the absence of active symptoms to the contrary a longer wait is desirable in the intraperitoneal variety, as the placental attachment is liable to cover a good deal of area and may involve several of the viscera and it is highly important that its vascularity should be arrested before operative measures are carried out. At these late operations it is important to avoid causing an uncontrollable hemorrhage, to avoid denuding an area which may become an avenue of infection and finally to avoid violent efforts at placental enucleation.

In the case of extrauterin pregnancy described by Wiener[2] the patient was a III-para, 28 years old. Her menses had been very painful (colicky in character) before

(1) Am. Jour. Obst., February, 1906.
(2) Muench. med. Woch., No. 27, 1905.

the first child was born. The diagnosis lay between extra-uterin pregnancy and pregnancy in a bicornate uterus. There had been a slight continuous hemorrhage for two months (the third and fourth of pregnancy) and she was finally unable to lie down on account of the pain. The abdomen was enormously distended and lay over more to the left side. There was fluctuation. Heart tones had not been heard for a month. The internal os admitted two fingers and at this point a diverticulum was felt with a larger passage leading to the right and upward, admitting two phalanges of the index finger, and a smaller passage to the left and behind, which did not admit the finger. Fundus could not be felt, so abdominal pregnancy was diagnosed. At the laparotomy a large amount of brownish fluid was evacuated and a macerated fetus, 19 in. long, which lay very closely applied to the placenta, which was about the size of a man's head and bullet shaped, was removed. The placenta was practically detached from the sac and was removed. The sac could not be removed on account of very extensive adhesions, so it was packed with iodoform gauze and drained through the abdominal wall. Recovery was excellent. The fetus was very much deformed and compressed, so much so that even the imprints of the toes could be seen. A remarkable coincidence was that the cord was not compressed sufficiently to cause the death of the child, even though a distinct groove had been produced by it. The cause of the pressure could not be attributed to the walls of the tube, since the tubal abortion or rupture must have taken place during the third month, when there was pain and hemorrhages. The patient was treated by other physicians during the whole pregnancy and did not consult Wiener until at the end of the tenth month of pregnancy. The fetal movements ceased at the time labor should have terminated. The pressure was probably and undoubtedly produced by the abdominal walls.

Toxemia of Pregnancy.

C. G. L. Wolf[1] is inclined to disagree with Williams in regard to his interpretations of the signifi-

(1) N. Y. Med. Jour., April 21, 1906.

cance of urinary findings in toxemia of pregnancy. He claims that even normal individuals under a change of diet may exceed the ammonia limit set by Williams as a sign of danger. This limit is greatly overreached in a starving person. As Brugsch has recently shown, the amount of ammonia in a healthy individual may reach the total of 35 per cent by merely abstaining from food, and this condition is similar to that of a pregnant patient, under which many studies have been undertaken.

Wolf attempts to explain Williams' cases where the toxic were differentiated from the non-toxic (nervous and reflex) cases by the total ammonia by the fact that in patients who have an excess of body fats the tendency is toward the elimination of a high total of ammonia, whereas, in patients who have a low supply of body fat, a low quantity of ammonia is excreted and concludes that the cases that Williams diagnosed as toxic were merely patients with an excess of body fats and those with a low quantity of body fats who lived on their protein were diagnosed as neurotic subjects.

Wolf concludes that it is impossible to explain the etiology of pernicious vomiting through the medium of acid intoxication.

Pernicious Vomiting of Pregnancy. J. W. Williams[1] writes an exhaustive article upon the pernicious vomiting of pregnancy. He divides the disease into three types, reflex, neurotic and toxemic, each of which depends upon different etiologic factors and each demands different treatment.

The reflex theory of Graily Hewitt that the vomiting is caused by abnormalities of the uterus holds true only in a few cases, as the vast majority of such patients go through pregnancy without any disturbance whatever.

The relation between pernicious vomiting and diseases of the cervix, as maintained by Copeman, has not yet been demonstrated and in many cases the patient died from lesions in other organs, notably the liver, while the uterin complication was only accidental.

Ovarian tumors, endometritis, hydramnion and twin

(1) Bull. Johns Hopkins Hospital, March, 1906.

pregnancy are occasional factors in the disease and their presence should be discovered and rational treatment followed out. The neurotic theory maintained by Kaltenbach in 1890 because of the great variety and non-uniformity of the pathologic findings in the reported cases also plays a definite rôle in the etiology, as is evidenced by the marvelous cures effected in many cases by simple methods of treatment.

Williams had his attention brought to the changes in the liver by a case lost after an induction of abortion at the third month of pregnancy, where he found at the autopsy that the liver presented the lesions of acute yellow atrophy, in that the central portion of the lobule had undergone complete necrosis, while the peripheral portion showed signs of fatty degeneration. Twelve other cases were collected from the literature showing the same pathologic findings.

In three of the writer's cases it was found that the total output of nitrogen was practically normal, while the urea nitrogen was considerably diminished and the amount of nitrogen excreted as ammonia was greatly increased, so that instead of representing from 3 to 5 per cent of the total nitrogen of the urine, the ammonia coefficient ran up to 32, 38 and 46 per cent, respectively.

An increase in the ammonia coefficient may or may not afford conclusive evidence of the existence of an acid intoxication and because of our present ignorance in regard to the matter, direct conclusions are inappropriate.

Williams points out that the amount of ammonia cannot be determined by noting the amount of urea as shown by the Doremus apparatus, as in this test the ammonia. as well as the urea, is decomposed by the sodium hypobromite solution. As a result it may happen that the test might show a normal urea output when in reality it was markedly decreased and its place taken by ammonia. The determination of total nitrogen is best determined by the Kjeldahl method and the amounts of urea and ammonia by the methods of Schoendorf and Schloessing, respectively.

Williams opposes Ewing's conclusions that acute yellow atrophy and eclampsia are one disease and claims that these two diseases are distinct, clinically, chemically and pathologically.

Clinically, eclampsia is nearly always preceded by a characteristic pre-eclamptic toxemia, usually associated with general disturbance and evidence of involvement of the renal and circulatory systems and we find albumin, casts and edema.

In vomiting, the urine is practically normal up to a short time before death, and its quantity is in direct relation to the quantity of fluid ingested; whereas, in eclampsia the quantity is always reduced. Chemically, in eclampsia there is a marked decrease in the total amount of nitrogen excreted and marked variations do not generally occur in the ammonia coefficient. In vomiting, the total amount of nitrogen may be quite normal, while the ammonia coefficient becomes unusually high. From a pathologic standpoint, the lesion in eclampsia consists of hemorrhagic necroses occurring in the portal spaces, at first sharply limited, but as they enlarge, they invade the lobules from the periphery to the center and these lesions are so diagnostic that their mere presence justifies the diagnosis of eclampsia, without any knowledge of the clinical history of the case.

On the other hand, the lesions accompanying toxemic vomiting are purely degenerative in character and begin about the central vein of the lobule and gradually extend to the periphery.

At the present time we have to deal with at least two types of the pernicious vomiting of pregnancy, one giving rise to eclampsia or the pre-eclamptic toxemia and the other to the vomiting of pregnancy and acute yellow atrophy of the liver.

Williams believes that a marked increase in the ammonia coefficient in women suffering from pernicious vomiting indicates the existence of a severe toxemia and if this is allowed to continue it will result in such lesions of the liver and other organs as would be incompatible with life. As soon as the diagnosis is made, therefore, abortion should be induced as offering the only hope of saving the patient's life. It is difficult to state just how high the ammonia percentage may rise before a distinct indication arises for intervention, but probably 10 per cent is the signal for operation. The determination of the ammonia coefficient proves a valuable means of diagnosis from the

neurotic and reflex causes, as in these latter cases the output of ammonia is normal.

While the reported cases of fetal toxemia are few they have been studied in order to ascertain whether eclampsia is caused by some poison generated in the mother and transmitted to the child or whether the fetus is the primary origin of the disease.

[The identity of hyperemesis gravidarum with toxemia of pregnancy was pointed out by the Editor in 1896, and treatment instituted along these lines has often been succusessful. The resemblance of hyperemesis to acute yellow atrophy of the liver was also pointed out by the Editor in a clinical lecture at Wesley Hospital in 1903. The patient was an Italian, I-para, æt. 23. She was pregnant 3 months and had been vomiting 4 weeks. There were present nausea, vomiting, emaciation, fever (slight), delirium, icterus and diminution of liver dulness. Urine had albumin and less urea. Therapeutic abortion cured the patient.—Ed.]

W. S. Stone[1] concludes from his own four cases and from a study of the literature that these fetal lesions are sufficient to prove their identity with those now recognized as associated with the effects of eclamptic poison in the mother. The fetal lesions in general may be considered to be less intense than those of the mother, but there is no uniform variation. Marked hemorrhages and congestions may be more intense in the fetus. Destruction and necrosis of cells are not so uniform as in the maternal tissues, though isolated cases may seem to prove the contrary. The prognosis seems to depend more upon the time the disease has lasted than upon the intensity of the infection and the earlier in pregnancy the disease begins, the worse is the outlook for the fetus. In cases of short but intense infection, the fetus may be born alive, though markedly asphyxiated. In cases of long duration, comparatively mild for the mother, the fetus is more likely to be born dead, or, if alive, to die of eclampsia in a few days and present changes in its organs that would be considered severe in the mother. That in some cases poisons have been generated in the fetus itself

(1) Med. News, June 1, 1905.

seems to have been proven by Dienst, who believes that because of the disproportionate growth of the fetus at the end of pregnancy some retrograde products of albuminous metabolism are formed, which can only be transmitted to the mother through the placenta, as the fetal kidneys do not functionate. These poisons are transmitted directly into the maternal blood and unless the mother's excretory organs are capable of taking care of this excess, the degree of maternal toxicity will inevitably increase.

Dirmoser[1] says that he accepted the idea, now being extensively discussed, that the etiology of hyperemesis gravidarum rested upon a basis of autointoxication, as early as 1897, and also called attention to the simultaneous occurrance of eclampsia and pernicious vomiting. He believes that in connection with the hyperemesis toxins are developed which later on may produce eclamptic attacks.

He takes exception to the statement made by J. W. Williams that the kidney is the last organ to be affected, because albumin does not appear in the urine until just before death. According to Dirmoser, the urine may not contain any albumin in eclampsia and that in hyperemesis of moderate severity, traces of albumin may often be found.

Müller believes that the vomiting of pregnancy is very often a reflex neurosis of the sympathetic, brought on by stretching of, or pressure on nerve fibers included in chronic inflammatory fixations. They cannot or do not yield readily to the growing uterus and as a result produce the act of vomiting or merely nausea. The location of these areas may be varied. The treatment consists in the removal of the adhesions and the relief of the tension. This may be done by means of massage, stretching, raising the uterus with a tampon or the colpeurynter, or perhaps drawing it down. Hot douches, applications, sitz baths, enemas and depleting suppositories are of value, but the danger of inducing abortion should be borne in mind. The use of fibrolysin (recent) is also suggested as a means of removing or dissolving adhesions.

It should, of course, not be forgotten that the cause may

(1) Zentralb. f. Gyn., No. 41, 1905.

be found in hysteria, neurasthenia or intoxication from the bowel or liver.

A very obstinate case of hyperemesis gravidarum is reported by Uhle[1] The patient was a II-para and in the third month of pregnancy. Vomiting had been especially persistent and severe, and in spite of all the usual medications her condition became very grave, she being reduced almost to a skeleton. Absolute rest of the stomach was initiated. All food and fluids were given per rectum and small doses of morphin were given hypodermically. This improved the condition for a short time, but the old condition returned in all its furor. The uterus being strongly anteflexed it was thought that by introducing a colpeurynter into the vagina, the uterus would be raised and possibly this position altered. The relief was immediate. The following evening the colpeurynter was removed on account of slight pains. The vomiting began again the next morning, so the bag was reintroduced and results were equally favorable. From now on her condition improved wonderfully, vomiting recurring but a very few times. Pregnancy went on to term.

Anderodias[2] reports an interesting case of hyperemesis gravidarum occurring in a primipara of 20 years. During the first trimester she had frequent pains in the stomach and lower part of the abdomen and in the groin, accompanied by nausea, slight albuminuria, some edema, and palpitation of the heart.

At the end of 3½ months she had a mild attack of typhoid, accompanied by vomiting and some uterin pain. After the cessation of the typhoid, the temperature still remained elevated, about 102°, and her pulse was rapid as a result of which she became very emaciated and her condition very grave. Frequent attacks of syncope intervened. At the end of 6 months labor was induced and a living fetus delivered, though it lived but 12 hours.

The patient had three attacks of syncope after the operation but recovered very rapidly. The temperature went down, vomiting ceased and her appetite returned. It is interesting to note that the vomiting occurred in the second trimester and was no doubt the result of the typhoid.

(1) Zentralblatt f. Gyn., No. 24, 1905.
(2) Journ. de Med. de Bordeaux, No. 14, 1905.

L. Frank and Q. W. Hunter[1] conclude from their experience that in all moderate cases of hyperemesis it is usually possible by medicinal and other non-surgical methods to tide the mother over to term and thus preserve the life of the child. If the vomiting is caused by reflex irritation of some coincident malposition of the uterus, its readjustment will frequently relieve the patient. In those cases baffling all medicinal treatment in which rapid emaciation, failing strength and elevation of temperature are prominent features, the induction of abortion is called for and should be promptly carried out.

If the pregnancy is complicated by inflammatory conditions of the adnexa, it is distinctly unwise to temporize as there is much less danger to the mother by a prompt termination of the pregnancy than to allow it to continue uninterrupted to full term. In all cases of hyperemesis, if an artificial abortion is called for, it should be performed before the strength of the patient is exhausted, otherwise both mother and child will be lost.

L. Kolipinski[2] believes the vomiting of pregnancy is a reflex act of a hyperesthetic stomach, started by the ingesta, or by motion, and facilitated by the character of the food usually given. The stomach is not diseased and is able to perform its functions properly were it not for the peculiar state of unrest and excitability. The aim of the treatment was to give articles of diet of such physical structure that ejection was rendered more difficult. A woman who has been bedridden for weeks from hyperemesis, who has been unsuccessfully treated by drugs and light foods, will frequently find to her astonishment that she is able to retain and digest a meal of fried ham or bacon.

Foods which predispose to vomiting are water taken freely, milk, tea, coffee, soups, and all kinds of fluids, neutral, acid and saccharine, custards, eggs, toast and fruit. The worst combination offered is that of toast, eggs and sweetened tea.

The author recommends for breakfast pork in some form, cocoa, chocolate and corn bread; a dinner of beefsteak, roast or corned beef, with rice, potatoes, spinach,

(1) Therapeutic Gazette, June 15, 1906.
(2) New York Med. Jour., June 19, 1906.

cauliflower, kale or turnips. Fish, game, fowl and cheese are also allowed. The pork may be given more frequently than once daily, but it is important that it be the first food given on the empty stomach in the morning.

The writer has used this treatment with success in two cases and recommends it as being worthy of further trial.

Eclampsia.

Biologic Theories of Eclampsia. Three main theories of the causation of eclampsia have been advanced by Veit, Ascoli and Weichhardt, respectively, which are based on the biologic principles established by Ehrlich. That of Veit is a production of poison in the maternal blood as a result of deportation of placental cells. Ascoli believes that these cells stimulate the production of a new substance (syncytiolysin) which dissolves the cells and neutralizes their poisons, but when a large number of cells is carried into the circulation, this substance is produced in overabundance, the surplus producing the eclampsia.

Weichardt's theory is that a new and poisonous body (syncytiotoxin) results from the solution of the placental cells and under normal conditions is neutralized by an antitoxin and in the event that is insufficient in quantity, eclampsia is the result. Regardless of the fact that each one has had positive results in substantiation of his theory, which fact in itself should lend suspicion, Labhardt[1] maintains that the biologic theories do not harmonize with the pathologic-anatomic findings, nor with the generally accepted biologic and pathologic facts.

Furthermore, that the experiments have not furnished a sufficiently fair representation. He is therefore of the opinion that from a biologic standpoint, we have not as yet a clearer insight into the etiology of eclampsia, because the placenta and child are not foreign to the mother and that the absorption of any of their tissues does not result in injury to the kidneys nor any other organ and much less would it produce eclampsia.

Zweifel[2] says that lacticaciduria is an important etiologic factor of eclampsia. A careful examination of the urine

(1) Zeitsch. f. Gyn. u. Geb., B. 54, H. 2.
(2) Ark. f. Gyn., B. 76, H. 3.

and blood of 17 eclamptics revealed the presence of lactic acid in the form of crystals of zinc paralactate. It is probably derived from the meat ingested and is a result of imperfect oxidation. The demands of the growing fetus upon the maternal organism for oxygen may be greater than the supply will warrant, with the result that lactic acid is produced in greater or lesser amount and the convulsions occur. It has also been found in the blood of the fetus, and sometimes in a larger proportion than in the maternal blood. Zweifel considers it a sign of sufficient importance to induce labor at the first indication of eclampsia. He thinks the fetus is not materially injured as a result of the eclampsia or the lactic acid itself, but rather on account of insufficient oxidation. None of the fetuses that had a large proportion of lactic acid died before delivery.

Treatment should be positive and prompt and be instituted at the first sign manifested. The membranes should be ruptured first of all and all operative procedures should be performed under the influence of chloroform. It should also be remembered that lactic acid appears after the use of morphin, on account of which the latter is contraindicated. Venesection and the subcutaneous injection of 5 gms. of sodium chlorid and 5 gms. of sodium bicarbonate in a quart of water are of great value in the elimination of the lactic acid. The use of pure oxygen apparently seems to be absolutely indicated, though its use has produced rather indifferent results. It is much better on the contrary to stimulate deep respirations through the phrenic nerve by the faradic current. Results have been quite satisfactory. The diet, of course, must not be overlooked. Meat and eggs are to be interdicted, milk allowed in moderate amount, and fruit and vegetables ad libitum. The importance of examining the urine every two weeks is also referred to.

Füth and Lockemann[1] examined the spinal fluid of three eclamptics and demonstrated the presence of *lactic and paralactic acid.* These results harmonize with those achieved by Zweifel in examining the blood and urine.

Liepmann[2] (Bumm's clinic) performed a series of ex-

(1) Zentralb. f. Gyn., No. 2, 1906.
(2) Muench. med. Woch., No. 51, 1905.

periments on 113 animals and examined the placentæ of 67 eclamptics observed in the hospital, and a number of placentæ of eclamptics furnished by other physicians to determine something in regard to the *etiology* of the "disease of theories," and he came to the following conclusions: That there is a poison or toxin in the eclamptic placenta not found in the normal placenta and the poison is identical with that of eclampsia, because the more there is found in the organism, the less in the placenta, and vice versa. The chorioepithelium seems to play a most important rôle. The placenta is the producing and distributing point. The toxin shows a decided affinity for brain cells which are paralyzed by it and in turn neutralize the toxin. In addition the toxin injures the kidney and liver substance. Nephritis is secondary and when albuminuria is already present the condition may be aggravated.

The best treatment is immediate delivery. Prior to 1895, 47 cases were treated symptomatically and by the use of narcotics in Bumm's clinic, with a mortality of 30 per cent. From 1895 to 1900 43 cases were treated with narcotics, hot packs, bleeding and infusions of salt solution, with the same mortality (30 per cent).

Since April 1, 1901, immediate delivery was practiced in 93 cases, with a mortality of only 2.8 per cent. Eleven other cases were treated, but were received too late to get good results. If the last 79 cases, treated in the Berlin Charité, are only considered, the one death that occurred would reduce the mortality to 1.8 per cent. In this one case the patient was a III-para, had had three convulsions. Vaginal Cesarean section was performed and the puerperium was normal until the thirteenth day, when a series of six convulsions suddenly began and caused her death in 12 hours.

In addition to venesection and the use of salt solution, the use of caffein and camphor were very beneficial when the pulse was bad. Very good results were derived from Sylvester's method of artificial respiration in the cases that were very comatose or breathed very superficially. Warm packs are specifically warned against. Chloroform and narcotics are to be used as sparingly as possible, the best being the use of 3 gms. of chloral per rectum.

Harbitz, who recently reviewed all the work of the various recent observers in the eclamptic problem, states that the *most important and essential changes in eclampsia concern the blood,*[1] in which there is more or less coagulation with formation of thrombi and emboli. Partly dependent upon these changes are the hemorrhages, infarct and necroses. The liver changes, congestion, infarction and degeneration are rarely simulated by other diseases. Acute and chronic nephritis, as a rule, is absent; parenchymatous and fatty changes predominate and the kidneys are large, soft and pale yellowish in color. The central nervous system generally shows microscopic hemorrhagic infiltrations in the membranes and nerve substance. The inflammations of various organs, especially of the lungs, are usually secondary and accidental, rather than essential. The embolism of parenchymatous and particularly placental cells and villi has attracted much notice.

R. Dunlop[2] calls attention to one of the prodromal symptoms of the convulsion, namely, *pain in the epigastrium.* The pain is at first slight or merely a sensation of discomfort. When the symptom is well marked, it becomes so intense that the patient is forced to cry out. It may be associated with pain elsewhere in the abdomen or loins and may be accompanied by vomiting or dyspnea. When the pain is severe and continuous these complications are more likely to be present and betoken an imminent convulsion. In Dunlop's 8 cases, delivery stopped the spasms in one case; in two the convulsions were lessened; in four the condition was not changed or was even made worse.

[The Editor has always emphasized the importance of epigastric pain as a pronounced symptom of eclampsia. It is probably due to pathologic changes in the stomach and intestinal canal, as congestion and even hemorrhagic gastroenteritis may be found. If a patient presenting other symptoms of toxemia suddenly complains of pain in the pit of the stomach, and especially if it be associated with vomiting, the indication is urgent for the immediate interruption of pregnancy.]

J. E. Welch[3] reports a rare case of an autopsy on an

(1) Editorial, Journ. Am. Med. Assn., Oct. 21, 1905.
(2) British Med. Journ., Dec. 23, 1906.
(3) Medical News, Sept. 2, 1905.

eclamptic woman, which showed *rupture of both stomach and diaphragm.* The patient was taken with an eclamptic attack two or three days after delivery and after a succession of seizures died finally in a convulsion.

Autopsy disclosed two ruptures in the diaphragm on the right side, one around the left margin of the esophagus, which admitted the passage of three fingers, the other to the left of the esophagus, where the muscular fibers were separated so far as to allow of the passage of three fingers. The stomach was ruptured in three places along the lesser curvature and the contents had been forced through the diaphragm. That the ruptures were recent was shown by the absence of any inflammatory reaction.

Five cases of *eclampsia without convulsions* have been reported heretofore. In Esch's[1] case the patient was a primipara, aged 25. She had passed bloody urine before labor began. This was followed by spots floating before the eyes, vomiting (twice), severe headache, but no pains in the stomach. Ten hours after labor began blindness intervened and twitchings of the face were observed, but consciousness was fully retained. She soon became very restless and eventually unconscious. One hundred and fifty c.c. of urine, which was very dark brown or nearly black in color, were then withdrawn. It contained albumin and many casts. Dilatation of the os was slow and inefficient. Pulse and temperature soon went up and death occurred 24 hours after labor began without a convulsion. The anatomic findings and clinical history sufficed to establish the diagnosis of eclampsia.

J. C. H. Leicester[2] reports the case of a *chronic nephritic who developed eclampsia before labor.* Uterin contractions soon set in and the patient was delivered by forceps of a dead fetus. The following day an offensive vaginal discharge was present and vaginal douches were given. The second day a chill occurred which lasted one hour and the temperature rose to 103.4° F. Chills and fever continued for twelve days, when it was found impossible to move the bowels. The abdomen became distended, vomiting and peritonitis developed. Laparotomy released a large amount of fetid purulent fluid. No cause

(1) Zentralb. f. Gyn., No. 10, 1906.
(2) Lancet, Sept. 16, 1905.

of the peritonitis was found, except that the cardiac end of the stomach was covered by dense adhesions. The condition of the patient forbade further exploration and then operation was concluded. The woman lived two hours.

At the autopsy the spleen was found slightly enlarged, its capsule thickened and its upper half contained an abscess with black, sloughing walls. Microscopic examination showed streptococci. The abscess was in all probability due to a septic embolus from the uterus, but the fact that only one abscess resulted makes the case interesting.

Postpartum Eclampsia Due to Diabetes. S. J. Essendon[1] offers 2 cases as adding strength to the theory of autointoxication.

The first case was a VI-para. The patient was 9 months' pregnant and labor started with tonic convulsions, but mild in degree. As labor progressed the convulsions increased in severity until the fetus was delivered, when they stopped. An hour postpartum, very severe convulsions occurred and the patient succumbed shortly. The antepartum urinalysis showed no albumin, casts or bacteria; sp. g. 1.021; urea normal, and sugar 3.5 per cent.

The second case complained of severe headaches, fever, high-tension pulse, scanty urine and pain in the region of the right kidney during the seventh month of utero-gestation. Urinalysis showed a trace of albumin, granular and hyaline casts and 1.5 per cent of sugar. Labor came on in a few weeks with severe convulsions. Delivery was effected by accouchement forcé and forceps. The child lived. The convulsions continued postpartum for some time. The mother recovered.

Just before delivery the urine contained 1 per cent of albumin, hyaline and granular casts, bacteria, notably streptococci and colon bacilli, and 3 per cent of sugar.

J. B. Waters[2] describes the case of a woman who was safely delivered of her second child. On the fourth day postpartum she was found unconscious with typical convulsions. In 6 hours she had 8 convulsions. Treatment by morphin, hot packs and saline enemas was successful. The urine showed a faint cloud of albumin, but reduced

(1) New York Med. Jour., April 14, 1906.
(2) British Med Jour., Nov. 25, 1905.

Fehling's solution freely. The specific gravity registered 1.030. On the day following the convulsions, the urine was found to be normal. The change in the urine was supposed to be due to lactose, as the breasts at the time were hard and full.

Postpartum Eclampsia and Jaundice. Following a moderate case of eclampsia and delivery by forceps, Royster and Grandy[1] report the case of a woman who *developed jaundice* on the third day postpartum. The urine gave a strong reaction to the bile test, but no leucin or tyrosin was found. Vomiting alternated with diarrhea for a day, followed by delirium. The next day coma set in, the respiration was labored and the body was covered by a large number of ecchymoses. Violent passages of bloody stools occurred two hours before death. The liver was reduced 50 per cent in size. The capsule was loose and puckered, its consistency soft and spongy, of a deep yellow color, and occasional red areas scattered throughout the organ. In places the liver cells had entirely disappeared, and were replaced by a granular detritus containing a large amount of pigment. In other places, the outline of the cells was retained, but the protoplasm entirely replaced by fat droplets. Other liver cells were practically normal. The gall passages were normal.

[Ahlfeld years ago called attention to the concurrence of eclampsia and acute yellow atrophy of the liver. The Editor had 1 case of the same. It has occurred to him that there may be some relation between the use of large amounts of chloral and chloroform, and the rapid disorganization of the liver after eclamptic cases. The Editor is using more ether in his general obstetric practice, and also in the conduct of eclampsia cases.]

Treatment of Eclampsia. E. G. Zinke[2] lays down briefly his treatment for eclampsia on the theory that it is a toxemia of unknown origin. After the appearance of the well known symptoms, the patient is placed on an absolute milk diet from the start. Water is given ad libitum. Catharsis should be free every day. Winckel's pill of aloes and colocynth is very reliable. In obstinate

(1) Medical Record, Jan. 6, 1906.
(2) Am. Jour. Obstet., February, 1906.

cases, calomel or compound jalap powder is recommended. Calomel is excellent when the liver is found to be involved, preferably in combination with sodium bicarbonate. Hot baths daily for a few days in some cases, and two or three times a week in others are the best means to render the skin clean and active and in conjunction with hot drinks in large quantities favorably influence the activity of the kidneys. Fresh air, an abundance of fresh water, gentle exercise, calisthenics and massage are conducive to rapid elimination of the effete matters from the system.

After the onset of the convulsions, there are three aims in the treatment: (1) To control and abbreviate the duration of the seizure, (2) to protect the patient against injury during the attack, and (3) to remove the supposed cause of eclampsia.

(1) To control the convulsions, Zinke advises the use of chloroform, hypodermic injections of veratrum viride, until the pulse rate is at most 60, small doses of morphin and large doses, gr. xx to gr. xl, at intervals of an hour or two, of chloral hydrate per rectum. Bleeding has a place here, although copious bleeding is always contraindicated. Oxygen and saline solutions are spoken of with favor.

In the effort to remove the supposed causes of eclampsia, all measures of elimination may be resorted to. A word of warning is sounded against using too many remedies on one patient, as the overwhelming of the patient with drugs is worse than no treatment whatever.

Forcible dilatation of the cervix is not recommended unless the parts involved can be quickly opened up without injury. If eclampsia comes on before term, and it is decided to evacuate the uterus, deep cervical incisions or vaginal hysterotomy, followed by forceps or version, should be the treatment. If the patient is at term, and the cervix not completely effaced, the os closed, the child vigorous, possibly a pelvis not too roomy, the conservative Cesarean section is the proper method of procedure in skilled hands.

A. C. J. Wilson[1] recommends the *continuous administration of chloroform* during the labor until the child is delivered and the patient is partially under its influence

(1) Brit. Med. Jour., Nov. 4, 1905.

for some time afterwards. He states that in many cases occurring during pregnancy, where chloroform was given fully as soon after the first convulsion and continued until after the labor was completed, no more convulsions appeared.

[The post-mortem room should have, long ago, taught the practitioner the danger of chloroform. Fatty heart, fatty liver occurred so often at post-mortems in the days of chloroform for eclampsia, the conclusion was insistent that chloroform caused them.—Ed.]

F. Proud[1] briefly reports two cases where *lumbar puncture was followed by good results.* The first patient passed through a normal labor, but during the first day of the puerperium suffered from fourteen spasms, with deep unconsciousness throughout. In spite of the usual treatment, she grew worse rapidly. A puncture was then made in the third lumbar interspace, with an antitoxin syringe when a rapid dropping of fluid ensued for some minutes. The convulsions ceased, consciousness gradually returned and the recovery was uninterrupted.

The second case was delivered by forceps, but the condition was bad for nearly an hour; stertorous respiration, irregular and weak pulse and unconsciousness. About one-half ounce of cerebro-spinal fluid was removed, with very satisfactory results and the patient made a rapid recovery.

[Spinal puncture has proven absolutely useless in 32 cases in which it has been tried. Originally suggested by Helme, of Manchester, it was extensively tried in Germany. It has no scientific basis.—Ed.]

The case of eclampsia reported by Frei[2] emphasizes very markedly the fact that any one of a number of treatments may suffice to bring about a favorable outcome, but no single one is all sufficient, and also corroborates the statement that the most severe cases may recover more easily than those that are apparently of a milder nature.

The patient was a primipara and had had 18 convulsions when first seen. Her temperature was 106° and pulse was 160. The os and cervix were closed. Dilatation was performed with a Fritsch dilator, without an anesthetic, sufficiently to introduce a bougie, after which the vagina was

(1) Brit. Med. Jour., March 24, 1906.
(2) Correspondenzblatt f. Schweiz. Aerzte., Oct. 1, 1905.

lightly tamponed. After rupture of the membranes, her condition became much better. Labor pains began 24 hours later and in 5½ hours terminated spontaneously with a dead baby. Her condition continued to improve without any untoward event, excepting a temporary aberration of the mind 16 hours after labor, which ceased in 6 hours.

Frei is very favorably disposed toward venesection in selected cases, but the condition of this patient did not warrant this procedure on account of the rapid, weak pulse. He also questions the advisability of resorting to an anesthetic in the cases that have had a number of convulsions, in those who are in deep coma, accompanied by weakened heart action. He thinks a lesser degree of accouchement forcé is indicated.

[An immense amount of material on Eclampsia was placed this year before the Editor. Practically nothing new has been added to our knowledge of the causation and pathology. In the treatment, however, it seems that a gain has been made, in that it is clear the most certain way of stopping the convulsions is to empty the uterus. Rapid delivery then should be performed as soon as the patient has had the first convulsion.]

Albuminuria of Pregnancy and the Induction of Premature Labor. Veit[1] takes the standpoint that neither albuminuria nor the kidney of pregnancy in themselves, but the first signs of a transposition into nephritis is an indication for the induction of premature labor. Ascites, hypertrophy of the left ventricle and especially the changes in the retina also call for intervention.

If the patient already has a nephritis, Veit induces premature labor only when there is a distinct disturbance in the patient as indicated by increasing dyspnea or irregularity of the pulse.

[The Editor would warn against too much temporizing in cases of albuminuria and the nephritis of pregnancy. Suddenly convulsions may occur, blindness may supervene, detachment of the placenta, or the patient may go into coma. These are treacherous cases.]

(1) Berl. klin. Woch., No. 27, 1905.

Complications of Pregnancy.

Laryngeal Tuberculosis and Pregnancy. Of the 97 cases of tuberculosis of the larynx complicating pregnancy, collected by Kuttner,[1] 90 died. Of the 66 children reported, 40 died (60 per cent). It is questionable that many of the remaining children survived the first years of childhood. Women who have had a laryngeal tuberculosis are placed in a dangerous situation, even though years may have intervened. It appears early in pregnancy and only exceptionally remains stationary. It usually spreads at the middle of pregnancy. Premature delivery is frequent, but abortion is not. Progress is very rapid immediately after delivery. The conclusions reached by Kuttner are, that diffuse laryngeal tuberculosis during pregnancy presents an unfavorable prognosis. The mortality of the child is very large (60 per cent) and for the above reasons the condition is to be considered as a justifiable indication for termination of pregnancy. It is, however, only permissible when it furnishes the only chance and a *possible one* of saving the mother. In the latter months of pregnancy the chances of recovery, after induction of labor, are very slim. In this period tracheotomy may improve the prospects in cases not hopeless.

Pulmonary Tuberculosis as an Obstetric Complication. C. S. Bacon[2] states that from one to one and a half percent of all pregnant women have tuberculosis in such degree that it can be detected if careful examination is made. About half of the cases are of a severe type. Using this ratio, of the 2,400,000 women confined in the United States annually, about 24,000 to 36,000 suffer from tuberculosis.

In pregnancy tuberculosis has a bad effect in many cases, especially when the nutrition of the patient is low. Hence, for this reason, nausea and vomiting or other toxemias may increase the dangers. In the severe cases, fever and coughing are common and abortion is prone to occur, though this latter tendency is less common than in complications of pregnancy by heart or kidney disease.

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(1) Berl. klin. Woch. No. 29, 1905.
(2) Journ. Am. Med. Assoc., Oct. 7, 1905.

The advent of labor exerts a pernicious influence upon tuberculosis as the shock, loss of energy and depletion of the system is extreme and not rarely leads to death. The detrimental effect of labor and the latter part of the pregnancy is evidenced by the rapid progress made during the puerperium. If the exhaustion has been severe, the patient dies in two or three days; in milder cases the disease rapidly makes inroads upon her remaining strength.

In the tuberculous unmarried, there can be no excuse for a marriage that will only lead to dangerous complications. In the so-called "cured" cases, each must be studied by itself.

If the tuberculous wife is in such circumstances that she can afford for herself the best of care during pregnancy and labor, pregnancy may be permitted, but if these conditions are lacking and if she would be compelled to nurse and care for her child, pregnancy should be forbidden. For this latter class of cases, artificial sterilization may be a legitimate operation and the vaginal resection of the tubes is the simplest and best method for its performance.

After labor, the greatest danger for the first forty-eight hours is from circulatory disturbances. Oxygen, strychnin and physiologic salt solution are the best remedies at this time. Later, especial attention is to be paid to nutrition and fresh air. The mother should never nurse her child and it should not be kept in the same room with her. The child should be reared by a wet nurse, there being no danger of infection as it is almost never tuberculous itself.

After observing 15 cases of *pregnancy complicated by tuberculosis of the lungs* in the various stages, in the *mountain regions,* Burckhardt[1] comes to the conclusion that pregnancy, *eo ipso,* does not exert an unfavorable influence upon the course of phthisis and the treatment of the latter is quite successful in the high altitudes. Cases of advanced phthisis may remain stationary during the interval of pregnancy and in general the prognosis is favorable.

An abortion, on the contrary, exerts no favorable in-

(1) Deutsche med. Woch., No. 24, 1905.

fluence, and may even act deleteriously. The induction of abortion is therefore to be performed only in exceptional cases, such as the last stage of phthisis and those complicated by hyperemesis gravidarum.

During labor the amount of effort and the loss of blood are to be restricted to the smallest possible degree. The use of chloroform is interdicted. The mother also should not nurse her infant. The treatment should continue in the mountains from four to six months after delivery, even in the milder and more favorable cases, to avoid relapse.

Induced Abortion in Tuberculous Cases. Ruge[1] says that in cases of pregnancy complicated by tuberculosis, abortion is indicated when the disease is not too far advanced and in the early months of pregnancy. It is not to be performed in cases of advanced tuberculosis, since the patient cannot be permanently benefited, and is only exceptionally indicated in the advanced cases, when very severe symptoms may be improved through abortion. The cases of incipient tuberculosis in which recovery is possible are to be relieved as quickly as possible. Ill results may, of course, sometimes be obtained.

Ruge reports two cases from his own experience. In one case, an extensive removal of the glands of the neck for tuberculosis had been undergone two months prior to conception. Patient lost weight very rapidly. Abortion was performed at the third month and recovery was perfect. Ten months later she conceived again and in due time was delivered of a healthy boy without recurrence of the tuberculosis. In the second case, the patient had a hereditary history and had lost 16 pounds. She was pregnant four months. Abortion was performed and recovery was perfect. One year later there were no signs of tuberculosis.

[The Editor agrees with the last writer that abortion is indicated in early cases of tuberculosis pulmonum. Unwelcome as the necessity is, the accoucheur must not allow the disease to advance as rapidly as it does, usually in pregnancy. Especially if a tuberculous woman vomits much in pregnancy is the indication strong for therapeutic abortion.]

(1) Berl. klin. Woch., No. 33, 1905.

Edema of the Lungs. Pouliot[1] discusses edema of the lungs as a result of mitral stenosis complicating pregnancy. The attack may occur, when the woman is apparently in good health, by symptoms which show embarrassment of the pulmonary circulation. After childbirth there develops a pulmonary edema. It begins with suffocation and terrible dyspnea and resembles cardiac asthma to a marked degree. The breathing is rapid and hurried and the patient notices a tickling of the pharynx, which causes a constant cough and expectoration. The usual auscultatory signs are present. The patient may die from the efforts in expectorating or during the attack of pulmonary edema. This condition, while usually due to the hypertension of the pulmonary circulation, may also be one of the results of the toxemia of pregnancy caused by the want of elimination of the toxic products by kidneys more or less diseased. The patient is best treated by inhalations of ether, and by injections of camphorated oil. Bleeding gives good results.

Myelitis Complicating Pregnancy. J. T. Schell[2] reports a rare case. The patient had passed through one normal labor and when examined later the pelvic organs were normal except for a tender right ovary and a slight cervical laceration.

During the first 7 months of her second pregnancy the patient enjoyed good health. At this time she was exposed to the weather and suffered from general muscular soreness, especially of the loins and thighs. After two days she noticed that control of the left leg was lost, and twelve hours later the right leg was also paralyzed. The patellar reflexes were entirely absent; sensation was unimpaired. Incontinence of urine lasted 48 hours; the bowels were not affected. The labor was rapid, lasted 2½ hours, and was normal in every way. The urinary changes were negative throughout the disease. Under treatment the patient has regained slight use of the right thigh and leg, but she is still unable to stand.

The cause of the myelitis in this case was attributed to the exposure rather than to the toxemia of pregnancy.

Appendicitis and Pregnancy, and Puerperium. Web-

(1) Annals of Gynecology and Pediatry, October, 1905.
(2) New York Med. Jour., March 31, 1906.

ster[1] states that the occurrence of pregnancy does not favor the development of primary appendicitis, but where there has been a former inflammation the resulting increased vascularity and constipation may exert a baneful influence. The most important influences may be mechanical from pressure of the growing uterus or stretching of the adhesions. This latter condition is more serious when the appendix is attached to the broad ligament or the pelvic viscera. Pregnancy is a no more serious complication in non-suppurative appendicitis than the non-pregnant condition, but in suppurative attacks gestation greatly increases the danger.

Webster believes that every woman who has had one attack of appendicitis should be operated upon before pregnancy is allowed to take place. If the primary attack occurs during pregnancy an operation should be performed at once, and the earlier in pregnancy the operation is done, the more satisfactory will be the result. In advanced pregnancy, Webster allows an accouchement forcé followed by the abdominal operation, provided there is no localized abscess formation.

The importance of the obstetrician being thoroughly familiar with certain conditions occurring in connection with pregnancy, such as appendicitis, etc., that are usually transferred to the surgeons, is fully exemplified in the report of two cases of perityphlitis complicating pregnancy reported by Gauss.[1]

In the one case perforation occurred and the patient died of the resulting peritonitis. In the other an abscess formed in the "cul-de-sac" of Douglas through extension and was treated by incision and drainage. Recovery was complete in ten weeks.

The diagnosis in both cases was very difficult and, in fact, impossible to make absolutely; hence the necessity of thorough surgical-gynecological and obstetrical experience and technic to properly treat pregnancy complicated by perityphlitis.

Futh[2] reports 5 cases of pregnancy with a complicating appendicitis. One of the patients died without surgical intervention.

(1) Surg. Gynec and Obstetrics, July, 1905.
(2) Deutsche med. Woch., No. 27, 1905.

The great tendency towards recurrence (21 per cent) of appendicitis during pregnancy through the displacement of the cecum, or the breaking up of former adhesions, makes the complication a serious one and renders it necessary to consider seriously the operative treatment of the appendix. Several authorities, among them Pinard and Monod, advise early operation in all cases that have had appendicitis and some even during the interval in the child-bearing period. The most favorable time for operating during pregnancy is in the third or fourth month, though in an incipient attack immediate operation is indicated. As an important diagnostic point, Futh calls attention to the great difference between the axillary and rectal temperature, varying in his cases from 1.9 to 2.6° C.

The treatment of appendicitis in women is more simplified than in men on account of the ease with which a resulting abscess in the Douglas cul-de-sac may be drained through the vagina, though the danger of the infection entering the uterin cavity must be considered, which may be obviated by drainage through the rectum.

[As a point of interest may be mentioned the occurrence of ureteritis in pregnancy, and the difficulty of the differential diagnosis between it and appendicitis.—Ed.]

Ulcer of the Stomach and Pregnancy. A very rare complication of pregnancy is ulcer of the stomach. In the case reported by Le Play[1] the patient was 27 years old and six months pregnant. She had vomited very severely for the last three months. Her stomach was dilated and tender on palpation. Vomiting was continuous and profuse. Under absolute rest and some medication there was some improvement, but two weeks after admission she was seized with a severe attack of hematemesis and syncope. Several other attacks followed which alternated with attacks of melena. She rapidly became very weak and anemic and aborted three weeks after admission with but very little hemorrhage. In the following week she had repeated attacks of hematemesis and sank very rapidly and died. The anemia was so intense that it resembled progressive pernicious anemia. Ergotinin, ice, serum, gelatin and other agents were of no value.

(1) Arch. f. Gyn., B. LXXVI, H. 3.

The viscera were very much discolored. The stomach was distended and filled with old blood. There was an ulcer on the lesser curvature which extended from the cardia to the pylorus, measuring 3½x5 in. There was *no* perforation. The borders were raised and the base extended to the serous membrane. The surface of the ulcer was necrotic. The blood vessels nearly everywhere showed a marked sclerotic condition.

Le Play considers this last fact very important in determining the etiology, because there must have been diminished nutrition, on account of the arteriosclerosis. The adjacent areas of the mucosa would undergo degeneration and offer but little resistance, if any, to the action of the acids, especially the hydrochloric, of the gastric secretions. He thinks that pregnancy would aggravate the condition.

Carcinoma Ventriculi with Metastasis in the Uterus at the End of Pregnancy. Couvelaire[1] reports an interesting and rare case of carcinoma with metastatic growth in the pregnant uterus at term. The patient was a primipara, 35 years old, whose previous history was negative. Her last menses occurred on the 15th of July. During the month of June she had consulted a physician on account of "stomach trouble." During the first three months the vomiting became very severe and was attributed to the pregnancy until she entered Pinard's clinic on the 11th of October, and a carcinoma of the stomach was diagnosed. Vaginal examination was negative. After appropriate treatment she was able to leave the hospital October 30. She again entered the hospital April 5 of the following year and the vaginal examination revealed *nothing abnormal.* The gastric tumor apparently had not increased in size. By the end of April her condition had become rapidly worse. Attacks of diarrhea and the appearance of ascites rendered her condition very grave. There were as yet no signs of beginning labor and the condition and position of the fetus were good. May 17 (301 days after the last menses) she experienced some vague pains in the lower part of the abdomen. Internal examination now revealed an unexpected condition. The culs-de-sac of the

(1) Ann. de Gyn. et d'Obst., May, 1905.

vagina, the cervix, and the lower uterine segment were infiltrated and hard. The cervix was long, increased in size, of cartilaginous hardness, but not ulcerated. It was then decided that Cesarean section gave the only hope for a living child. It lived but an hour and a half after delivery. The autopsy showed that the finer ramifications of the bronchi were clogged with meconium.

The puerperium was accompanied by fever for 23 days, but the wound healed by first intention. The patient died 51 days after operation after metastatic growths had appeared in the intestines.

Pregnancy and Carcinoma Recti. The complication of carcinoma of the rectum with pregnancy has been but rarely observed. Nijhoff[1] has collected the reports of 26 which he classifies as:

1. Those that have not been recognized until after labor or at the autopsy.

2. Inoperable carcinoma discovered just before or during labor as a hindrance to same.

3. Operable cases discovered during pregnancy. In Nijhoff's case the patient was a primipara only 18 years old and in the seventh month of pregnancy. She was in a deplorable condition, and the tumor inoperable, so an expectant plan of treatment was followed on account of the child. Labor began in the eighth month and was terminated with forceps because the tumor was a distinct hindrance to advancement of the head. The conjugata vera was reduced to 7 cm. on account of it. The head showed marks of compression and was very dolichocephalic. The infant survived but the patient died the second day.

In the inoperable cases Nijhoff recommends the expectant treatment if the child is nearly viable, since the mother is not benefited by intervening and the child should receive the most consideration. If the child is dead when labor begins a mutilating operation should be performed, but if living, Cesarean section is almost always indicated. If the patient dies, section should be performed immediately after death. Hé does not approve operating thus on the moribund. The uterin incision, in the living, should be as far removed from the carcinoma as possible.

(1) Zentralblatt f. Gyn., No. 28, 1905.

The Porro operation is indicated only when the uterus is infected.

If the case is operable, the sooner operation is performed the better, and it would be wiser to induce abortion or labor first and operate on the carcinoma a few weeks later, owing to the great danger of infection in abortions following the operation, and they almost invariably occur.

It is of interest to note the age of the patients in the 18 cases where it was given. Eighteen once, 24 once, 25 twice, 26 once, 27 twice, 29 twice, 30 once, 31 once, 32 thrice, 35 once, 37 once, 40 thrice, and 43 once.

Vaginal Hysterectomy for Carcinoma of the Cervix During Pregnancy. The tendency heretofore in the treatment of carcinoma of the cervix during pregnancy has been toward the expectant in the hopes of securing a living child, since the chances of saving the mother are rather slim, owing to the frequent recurrences. The chances for the child are, nevertheless, not increased, according to Condamin and Condamin,[1] owing to the constant danger of abortion, the hemorrhages from the carcinomatous portions, which may be very severe, threatening the life of the mother, and the rapid extension of the disease into the fundus. This occurs very rapidly during the pregnant period owing to the increased vascularity of the tissues. Even though the pregnancy may continue to term, there is an added danger to the child in the obstruction to labor that the tumor may prove to be.

If the case proves to be operable, vaginal hysterectomy should be performed at once as the best means of saving the mother's life. If the parametrium is involved, the mother is doomed and attention should be directed toward saving the child.

If the carcinoma is detected during the 6th or 7th month, and it is believed that after waiting a month or two longer the radical operation may still be performed successfully, it would be the wiser procedure to wait, since the infant's life may thus be saved. If the case is observed earlier, the radical operation should not be deferred in the interest of the child. Vaginal hysterectomy is the operation of choice, and it is better to incise only the anterior

(1) Ann. de Gyn. et d'Obst., March, 1905.

vaginal wall, split the cervix, empty the uterus and then clamp after the uterus has been tilted forward, after which the lateral and posterior vaginal walls are incised. This insures a minimum loss of blood.

After the eighth month of pregnancy the abdominal section is indicated on account of the increased volume of the child. The vaginal operation is really no more difficult than on the non-pregnant uterus and is certainly to be preferred in the cases before the ninth month on account of the lessened danger of infecting the peritoneum.

Typhoid Fever and Pregnancy. In the case reported by H. T. Hicks and H. French[1] the mother was seven and a half months pregnant when she was taken sick with typhoid fever. Eight days later she was delivered, but the fetus died three-quarters of an hour later. The necropsy of the child revealed no pathologic changes. Blood from the mother gave a positive Widal test in 5 per cent solution, but the fetal blood was negative in solutions of 50 per cent.

In a study of 50 cases the authors find that the typhoid bacillus has passed into the fetal blood in about one-half of the published cases. It seems that the duration of typhoid fever is an important factor in determining infection of the fetus and hence if the fetus is viable, premature labor should be induced in the early part of the fever.

In seven cases positive reaction was found, showing that the typhoid agglutinin occurs in the serum of a fetus born of a mother suffering from typhoid fever.

[The Editor would disagree with the author of the advice to induce labor early in cases of typhoid. Pregnancy is not always interrupted by typhoid (60 per cent Vinay). He has had 2 cases of typhoid in the seventh and eighth months with recovery and delivery at term.]

Pyelonephritis Gravidarum et Puerperarum. The subject of pyelonephritis during pregnancy or the puerperium has not heretofore been so exhaustively considered as by Opitz.[2] He collected 84 cases, of which 15 were recurrences or had existed prior to the pregnancy. The majority have been collected from the French literature. The

(1) Lancet, June 3, 1905.
(2) Zeitsch. f. Gyn. u. Geb., Band. 55.

importance of recognizing this condition and the comparative ease with which the infection may travel upward into the pelvis of the kidney during pregnancy or the puerperium is hereby fully emphasized. The condition is the result of a *urinary stasis* due to compression of the ureter by the pregnant uterus, *i. e.,* the presenting fetal part, and a cystitis which is common during pregnancy and is usually caused by the B. coli communis, though Baisch maintains that staphylococci and occasionally streptococci are the active agents and that the B. coli communis is present chiefly in the rôle of a parasite.

The right kidney was involved in 50 out of 63 cases. The prognosis for the mother is not especially dangerous, though only about one-half of the cases recovered completely. In the remaining cases pus and albumin are found in the urine and relapses occur very readily. Some of the severest cases recovered completely and rarely did the acute form continue any length of time after delivery. Only one of the 69 women died as a result of the condition, 20 recovered during pregnancy and 16 after delivery.

The prognosis for the children was very grave, since the pregnancy was so frequently terminated prematurely, either spontaneously or artificially.

During the puerperium the fever may continue for some time, especially when the patients have had fever up to or very shortly before delivery. If a longer period of time has intervened the patient is less likely to run a temperature during the puerperium.

When there is fever the course is usually short, a matter of only a few days, which is due to the release of pressure upon the ureters and the termination of labor, permitting the pelvis of the kidney to drain thoroughly. The time required for recovery depends of course upon the severity and length of the attack.

The question of a recurrence in a succeeding pregnancy is a very important one, and it may be very correctly assumed that unless there is complete recovery, a recurrence will take place and it would be advisable to take steps toward preventing conception.

If recovery is complete, which can only be determined in the course of a long period and numerous urinary

examinations, it may be assumed that the condition will not return in a subsequent pregnancy.

The diagnosis may be readily made by the sudden appearance of high temperature after a chill, urinary difficulties, pain in one or both of the kidney regions, and the presence of pus and casts in the urine. The slowly developing cases are more difficult to diagnose, but careful examination of the urine will establish the diagnosis in time.

It should not be confused with appendicitis. Treatment should be directed toward the cause; variation in posture to relieve pressure on the ureter; oftentimes rest in bed is sufficient. The lateral position is preferred, since the uterus is drawn out of the pelvis. Irrigation of the urinary tract and removal of irritation to the kidneys, especially regulation of the bowels, are indicated. Hot and cold applications are also of some value, but in the event of failure of the above, induction of labor is indicated. Surgical treatment of the kidney in a simple pyelonephrosis gravidarum should be the exception, though the induction of premature labor is of no value in cases of pyonephrosis.

Sippel[1] describes a case in which a primipara, 33 years of age, developed a large, tense, painful and fluctuating tumor in the left lumbar and abdominal region during the sixth month of pregnancy which led to the diagnosis of a perinephritic abscess. The urine was not examined because the family physician said that it was negative and the patient had noticed nothing unusual about it. The operation was performed during the 7th month of pregnancy, at the time when Sippel first saw her. It was then discovered that the diagnosis had been incorrectly made, and it proved to be a pyelitis. One and one-half quarts of pus was removed. She was placed on her right side to prevent further compression of the left ureter and in four days the urine contained pus, showing the permeability of the left ureter. Improvement was rapid and pregnancy went on nearly to term and terminated without further complication. It is believed that the infection

(1) Zentralblatt f. Gyn., No. 37, 1905.

was an ascending one, with the B. coli communis as the active agent.

Hepatic Insufficiency in Obstetric Practice. Edgar[1] states that much of the morbidity and mortality of pregnancy and the puerperium may be avoided by the early recognition and the treatment of the autotoxemia of pregnancy as indicated by hepatic insufficiency. Edgar is inclined to the belief that a specific toxemia of pregnancy exists. The pregnant woman should be constantly under the observation of the physician and too much reliance should not be placed on the urinary findings alone, but other variations should be studied, such as nausea and vomiting, headache, physical and mental lassitude, high arterial tension and alterations in character and disposition.

Heart Disease as an Obstetric Complication. In reviewing the literature and his own experience, C. S. Bacon[2] finds that heart disease as an obstetric complication occurs in fully 1.5 per cent of all pregnancies, though some writers place the percentage higher. The increase in the resistance to the circulation, due to a number of factors, among them being a toxemia which also directly affects the heart, the myocardium, is the chief cause of cardiac embarrassment.

A heart already diseased is of course more prone to injury during pregnancy; it may become degenerated or an old or latent inflammation may be aroused. The various sequelæ of heart disease may develop very rapidly during pregnancy.

If the general condition during pregnancy has been pretty bad, the outlook at time of labor is decidedly a serious one, due to the increased abdominal pressure. When labor is finished, the danger is by no means at an end, since sudden death has often appeared a few hours later. The question of inducing labor or abortion must of course be considered very carefully and from an individual standpoint. Abortion is said to occur in 25 per cent of all cases complicated with heart disease. Where it is considered advisable to conduct the pregnancy to term,

(1) Jour. Am. Med. Assoc., April 8, 1905.
(2) Jour. Am. Med. Assoc., Sept. 3, 1904.

Bacon advises rest and that in the horizontal position above everything else. If pains manifest themselves, morphin or codein in small repeated doses are used. The diet must be nutritious and easily assimilated. The clothing must be loose and light and baths are to be taken frequently but cautiously. The avoidance of infection and especially of the nose, throat and respiratory tract is quite important. Fresh, pure air in abundance and digitalis and strychnin are indispensable adjuncts.

The indications for the induction of premature labor are frequency of cardiac upsets, palpitation, growing weakness of the heart, increase in edema with disturbed respiration, and a serious impairment of nutrition. The operation should be deferred until the 36th week if possible.

The bougie and metreurynter are recommended. The importance of oxygen during the labor cannot be too strongly recommended. With it the patient is enabled to lie down, whereas without she might not be. Operative intervention should not be delayed too long.

The puerperium requires fully as careful attention as the antepartum period, as to diet, exercise, etc. It is better that the mother should not nurse the child.

[The Editor agrees with Bacon in the above points, but would emphasize the necessity of rapid delivery after the cervix is dilated. Until the complete dilatation of the cervix the patient is not allowed to bear down. If the child is not quickly expelled, under ether anesthesia, it is artificially removed. Oxygen, salt solution, instruments for rapid delivery and for venesection should be in readiness, and a skilled anesthetist with plenty of assistants should be employed.]

F. S. Clark[1] asserts that one of the most important points in the treatment of heart disease in pregnancy is regarding *rest and exercise*. If it happens that the heart has all it can do to take care of the pregnancy, the remaining period of uterogestation must be spent in the easiest way possible. Considerable time should be spent lying down and all efforts at lifting, straining and all mental anxieties avoided. If the pregnancy continues without cardiac weakness, little or no drugs should be

(1) Cleveland Med. Jour., March, 1906.

used, but if the compensation is ruptured the patient should be placed immediately upon digitalis or strophanthus.

The onset of labor begins the critical period for a patient suffering from cardiac disease. If she has not been placed upon cardiac tonics during pregnancy, a dose of digitalis or strophanthus is to be given at once. The use of strychnin, because of its direct stimulation of the uterin muscles, is questionable. If the first stage is unnecessarily slow, means may be employed for hastening the dilatation of the cervix.

All efforts at straining or bearing down are to be avoided in the second stage, and the labor should proceed spontaneously, if the condition of the mother permits, only until the conditions are present to allow of extraction by the forceps. Regarding anesthesia Clark believes that the danger from straining is more serious than that of using an anesthetic. If the case is a simple one without complications ether may be used, while, if there are renal or pulmonary complications, chloroform; the author, however, uses chloroform in all cases from the end of the first stage to and during the extraction by the forceps.

Following delivery, a postpartum hemorrhage is beneficial in cases of mitral stenosis, as it relieves the tension put upon the right heart. If the hemorrhage is too great, ergot should never be used to arrest the bleeding, as this drug only increases the arterial pressure. Syncope is a danger to be met with when the aortic valves are involved. This follows the sudden expansion and filling of the abdominal vessels after the child is born, and may be, in part, prevented by placing a binder around the abdomen before delivery and tightening it later. Cerebral and pulmonary embolism and pulmonary edema should be watched for, but unfortunately little can be done as prophylactic or curative.

Influence of Malaria upon Pregnancy, Labor and the Puerperium. It is generally believed that labor or abortion in a woman affected with malaria is due to (1) the severe anemia and weakness, (2) the high temperature, which has an inhibiting influence upon the nutrition of the fetus and probably produces contractions of the uterus;

(3) the quinin which must be given and is credited with the power of producing contractions. Louros[1] has arrived at a different conclusion and disregards the above-mentioned causes. In the cases observed by him the temperature never went higher than 40° C. (104° F.) and remained so but a short time. He does not believe in the influence of quinin, because he had often given it in other cases to increase or produce pains with practically negative result.

He attributes the causes of abortion or labor to changes in the placenta—infarcts, fibrinous alterations, etc. Microscopically he found small areas of neoplastic tissue and the villi were atrophic and revealed an absence of or changes in the vessels. The frequent occurrence of hemorrhage during the 3d stage and the puerperium may be explained by the greater tendency of the vessels to tear, as may be observed in hemorrhages from the nose and elsewhere.

Acute Leukemia During Pregnancy. Bostetter[2] describes an exceedingly rare and interesting complication of pregnancy occurring in a primipara 23 years old. She entered the hospital during the seventh month of pregnancy with an apparent threatened abortion. She had been flowing for three days and had had a severe tonsillitis for eight days. The tonsil had been incised and bled very profusely, but no pus was evacuated. The treatment instituted was expectant plus absolute rest in bed. The following day the abscess in the tonsil ruptured and considerable pus escaped. The next day the patient was very comfortable, but on the following morning she became restless and dyspneic. At 9 p. m. she again became very restless, but very suddenly her temperature went up to (40.2° C.) 104.4° F., and 15 minutes later she died suddenly. Death was attributed to heart failure as the result of a foudroyant sepsis. It remained for the necropsy to clear up the diagnosis. There were subendocardial hemorrhages, hemorrhagic fluid in the pleura, stomach, and small intestines, hemorrhage in the kidneys, *lymphomas* in the liver and an enlarged spleen containing infarcts. The blood had not been examined, but the case was probably one of acute

(1) Deutsche med. Woch., No. 2, 1906.
(2) Zentralblatt f. Gyn., No. 9, 1906.

leukemia which would explain the occurrence of hemorrhage from the tonsil after incision, and from the uterus, which simulated threatened abortion.

Dermatoses of Pregnancy. S. Pollitzer[1] remarks that while there is no skin disease that occurs exclusively in the pregnant woman, still the marked changes occurring in pregnancy affect the skin as well as the other maternal organs and, therefore, the term "dermatoses of pregnancy" is a perfectly justifiable one.

He includes among these diseases (1) those diseases of the skin that occur in a preponderating number of cases during the pregnant state, *e. g.*, impetigo herpetiformis; (2) those whose intimate connection with pregnancy is manifest from the fact that they disappear with the evacuation of the uterine contents, *e. g.*, herpes gestationis, chloasma; and (3) those transitory reflex, vascular and nervous dermatoses like urticaria, erythema, etc., which are found with relative frequency in pregnant women not subject to them in the non-pregnant state; and finally (4) the effects of pregnancy upon pre-existing dermatoses, as acne, eczema and psoriasis.

The dermatoses of pregnancy are comparatively rare, and especially so "impetigo herpetiformis," of which there are but 24 cases on record, and even many of them were probably not genuine cases, since they did not coincide entirely with Hebra's description.

The case described by Nobl[2] occurred in a woman 31 years old. She had been pregnant four times and each time, excepting the first, the impetigo herpetiformis made its appearance, as early as the 4th month in one case, but had always disappeared by at least the end of the second month post partum. It was the severest the last time and the most intense at the end of the 6th month of pregnancy. The labors were all normal and in the intervals the patient was perfectly well.

Whether the disease was of reflex or chemico-toxic character remains to be determined.

[The Editor several years ago had a case of impetigo herpetiformis. Dr. J. Zeisler saw the case and stated that it tallied perfectly with Hebra's description. The woman

(1) Am. Journ. Obstet., February, 1906.
(2) Wiener med. Woch., No. 21, 1905.

aborted a macerated fetus in the eighth month of pregnancy, and rapidly recovered. This was her third and severest attack; the two other pregnancies likewise terminating prematurely.]

C. A. D. Bryan[1] reports an interesting case of *recurrent herpes* occurring during pregnancy. The first attack occurred during the patient's sixth pregnancy. The eruption consisted of erythema, papules and vesicles of about the size of small peas located principally upon the forearms, though there were a few patches on the body and thighs. This rash gradually extended over the entire body, leaving only the palms of the hands and the soles of the feet free. The rash was very painful and produced marked insomnia. Various treatments were tried, but they apparently had no effect upon the disease. After continuing for six weeks the fetal motions began to diminish, until a diagnosis of fetal death was made. The rash gradually disappeared and about ten days later the mother was delivered of a still-born child. The patient recovered and complained of no further trouble until twelve months later, when she was about two months pregnant. The eruption recurred in the forearms and again spread over the body. There was considerable pain and discomfort, especially during the time when the patient should have had her monthly period, after which the eruption remained at its height for a week and then gradually lessened, but never disappeared.

Again the treatment had no effect, and when the patient's condition began to deteriorate, premature labor was induced by Krause's method and the patient was delivered of a six-months fetus, which lived about one week. The rash gradually disappeared and the general health of the patient remained quite satisfactory.

S. M. Brickner[2] describes a new growth occurring in pregnancy called *fibroma molluscum gravidarum*. It is described as a lesion of the skin appearing in the latter half of pregnancy, bearing a great similarity to fibroma molluscum in the histologic findings but differing from it clinically in that it disappears entirely after labor when the regenerative changes are completed. Its distribution is

(1) Lancet, Feb. 24, 1906.
(2) Am. Jour. Obstet., February, 1906.

limited to the breast, neck and submammary area. Although many of the lesions are pigmented, yet pigmentation is not a necessary condition. This pigment varies from a light to a dark brown. The tumors do not attain large size, but vary from that of a pinhead to that of a split pea. They may be sessile or have a small pedicle. The growths are always multiple, varying from ten to forty, but present no characteristic arrangement. The cause of the affection is attributed to some disturbance of metabolism occurring during pregnancy. The treatment of the disease is self-evident, as the growths disappear spontaneously after labor. If the growths are annoying, they may be removed with a pair of scissors with slight hemorrhage, as the vascular supply is limited.

A rare and interesting skin affection is that reported by Friolet,[1] *ichthyosis circumscripta of the mammary areola.* The patient was a primipara, aged 28. Since her 12th year she has noticed a peculiar excrescence of the areola of the mammary gland. The nipple was not included, the tissue between being perfectly normal. On the one breast there were a number of closely aggregated, dark brown, pigmented excrescences which were not moist and were separated by deep furrows. On the other breast the affection appeared as an unbroken ring surrounding the nipple. By applying pure cream the patient was able, from time to time, to relieve the itching, which was worse at the time of the menses, and to soften the tissues so that later the excrescences could be rubbed off by means of soap and brush.

The affection would remain away for some time and whenever it returned was again removed by the procedure above mentioned. The treatment instituted by Friolet was the application of compresses of olive oil which softened the tissues and permitted them to be rubbed off in a few days. The mother of the patient had the same affection. No similar case was found in the literature. It is to be regarded as a hyperkeratosis of the epidermis.

Purpura Hemorrhagica During Pregnancy. B. Van Sweringen[2] reports an interesting case in a primipara of 25 years of age who underwent several cauterizations of

(1) Muench. med. Woch., No. 38, 1905.
(2) Am. Medicine, Nov. 25, 1905.

the cervix for the relief of severe nausea and vomiting during the early months of pregnancy. Following this treatment, which resulted in a purulent discharge, hemorrhages occurred from the gums and nose into the cellular tissues and skin and also appeared in the urine and vaginal discharge. The treatment consisted of rest in bed, five-grain doses of calcium chlorid with one grain of extract of suprarenal gland every three hours and gelatin ad libitum. The hemorrhages soon subsided and the pregnancy continued to term. Delivery was effected by forceps and was followed with but slight hemorrhage. The puerperium was normal.

Peripheral Paralyses in Pregnancy. v. Hoesslin[1] classifies the peripheral paralyses of pregnancy as I *myopathic* and II *neuritic.* The myopathic he subdivides into (a) *osteomalacic* and (c) *polymyositic.* In the former the muscular involvement is co-ordinated with that of the bone. It is characterized by weakness, muscular pains, trembling, contractions in the large adductors of the thigh (early symptom), the pelvic muscles, the quadriceps and sometimes the shoulder muscles—deltoid, pectorals and trapezius. The tendon reflexes are increased. II The neuritic is subdivided into:

(a) *Traumatic puerperal neuritis,* the result usually of artificial aid and occurs during or immediately after labor. It occurs more frequently in old primiparæ. The nerves especially involved are the crural, obturator, and lumbosacral. The latter contains the fibers for the (1) peroneus, (2) tibial, and (3) superior gluteal. The former are especially compressed, as they lie on the innominate. The latter supply the adductors of the thigh and pressure on them produces paralysis of muscles supplied. Sometimes the whole leg, or even both, are paralyzed. Prognosis is usually good, though it should be guarded, as it depends on initial severity.

(b) *Neuritis puerperalis per contiguatem*—the result of inflammatory conditions such as puerperal phlebitis, phlegmasia alba dolens, and large parametritic exudates. It occurs later and *gradually.* Paralysis is less marked. The prognosis is good. Operation is sometimes preferable.

(1) Muench. med. Woch., No. 14, 1905.

(c) *Neuritis puerperalis post infectiosa* follows mild puerperal infections oftener than the severe septic or pyemic. The upper extremities are especially involved, such as the ulnar and median nerves. It occurs in the first weeks after labor, and is characterized by pain, later there may be trophic disturbances. Atrophy and degenerative signs are often observed. Recovery occurs in the course of several months, as a rule.

(d) *Neuritis toxica gravidarum et puerperarum* is the result of infectious diseases, macerated fetus long retained, hyperemesis (34 per cent), and autointoxication.

Various regions may be involved; often there is a general polyneuritis with severe symmetrical muscular atrophy of all the extremities, being often of the ascending character. In 40 per cent of the cases it is combined with Korsakowski's psychoses. Prognosis is the more unfavorable the more extensive the paralysis and the more rapid the involvement is. Death occurred in 30 per cent of the severe cases. Induction of labor is not advisable, since attacks may become worse after labor. Sometimes they did not appear until after labor was induced, hence it is not to be done unless the life is endangered.

[In the differential diagnosis of puerperal paralyses, the occurrence of rupture of the pubis should be noted, and the resemblance of its symptoms to a paraplegia remembered.—Ed.]

Hydrorrhea Uteri Gravidi. There are two forms of hydrorrhea uteri gravidi—the *amnial* and the *decidual*. The latter has been observed but a very few times. Stoeckel[1] reports 2 cases of the amnial form. In the first case the patient, a III-para, while jumping over a little stream at the end of the third month of pregnancy experienced a considerable flow of fluid from the vagina. This ceased for two days, when it returned in larger quantities while the patient was resting. At the end of the sixth month there was some hemorrhage, which continued to increase to such an extent by the end of the seventh month that labor was induced and a fetus 13 in. long and weighing 1,140 gms. was delivered. It died soon after birth. Puerperium was normal. Examination of the fetus and

(1) Zeitsch. f. Gyn. u. Geb., B. 54, H. 3.

membranes revealed a marked disproportion, it being very apparent that it was a physical impossibility for the sac to envelop the fetus regardless of how much it might be compressed, corroborating the opinion that the fetus must have escaped from the membranes at the time of the first discharge of fluid (3d month) and continued to develop outside the same.

The diagnosis of the amnial form during pregnancy is suggested by the relative smallness of the uterus in comparison with the duration of pregnancy and the occurrence of hemorrhage.

The etiology of the rupture of the membranes rests upon an inflammatory basis, since the condition is always accompanied by a placenta circumvallata and it is always the result of endometritic changes.

The prognosis for the mother is not absolutely good, on account of the hemorrhages and the greater danger of infection after rupture of the membranes, though if the patient is not frequently examined this is reduced to a minimum.

For the child the prognosis is grave, since it is subjected to considerable pressure and is usually prematurely born, though there are four cases on record in which the child survived.

Treatment consists in securing absolute rest. Stoeckel concludes that the greater majority of cases of hydrorrhea depend on rupture of the membranes and only rarely on decidual processes.

Operation During Pregnancy. Fellner[1] attributes the tendency for pregnant women to abort in diseases of the kidney or infectious processes elsewhere to an irritability of the *"pain"* centers as a result of toxins or poisons developed. He thinks though that operations may usually be performed successfully if performed soon after a menstrual cycle, on the supposition that pregnancy is more apt to be terminated at the time when the woman would otherwise menstruate.

The question of operating before or after term depends upon conditions. When it is likely that labor through compression of an adjoining abscess might rupture the

(1) Wiener med. Woch., No. 9, 1905.

same it is better to operate as early and as long before the expected time of labor as possible. In some instances it is better to operate after labor, as in carcinoma of the rectum.

Uterin Myoma. J. E. Briggs[1] discusses the question of treating fibroid tumors of the uterus when situated low down in the pelvis so as to interfere with labor. In the early months of pregnancy when the tumor is single and one that can be readily enucleated, a myomectomy can be performed and frequently without terminating the gestation. If the tumor is of large size and is so located as to seriously interfere with labor, he advises the patient to continue to term, when a Cesarean section can be done with good chances of saving the child's life as well as avoiding the serious operation of forcibly dragging the fetus past the point of obstruction. The pregnant woman is naturally fortified at term against loss of blood, shock and sepsis. The hemorrhage occurring during labor that apparently has but little effect on the patient would be a serious calamity if it occurred before term. Her greater ability to withstand shock is well illustrated by the fact that she suffers little from prolonged forceps operations, turning, and the various mutilating operations. Sepsis, as is well known, is seldom encountered in the dispensary patients who, according to all established rules, can hardly be expected to escape this disaster.

These facts can only be explained by a natural immunity resident in the mother. Briggs, therefore, recommends the performance of a Cesarean section at term and subsequent hysterectomy and claims successful results in two cases reported.

Stratz[2] has come to the conclusion that the *expectant treatment of myomata of the uterus* during pregnancy is the better treatment. Twenty years ago he published statistics regarding cases occurring in Schroeder's clinic which served to show, apparently, that intervention during pregnancy furnished the better results. It should be remarked, however, that many of the fatal cases treated expectantly were seen under the most unfavorable and

(1) Surg. Gynecol. and Obstet., January, 1906.
(2) Zentralblatt f. Gyn., No. 15, 1905.

adverse circumstances and outside of the hospital and then, too, were the severest cases, whereas the mild cases were often overlooked.

Since that time Stratz has observed 68 cases and found it necessary to intervene during pregnancy but once and then because the tumor was very large (3,000 gms.), and the patient only 5 weeks pregnant. The operation was successful and pregnancy went on to term. Seventeen of the cases aborted, though the tumor was not considered the cause. Of the remaining 50 cases the children remained alive. It is very evident that the removal may in general be deferred until after delivery.

According to Thorn[1] one is never in the position to say definitely that a myoma, apparently covering the inlet or occasionally dipping deeply into the pelvis to the cervix, will prove an absolute hindrance to labor, nor can one estimate the probable growth of the myoma during pregnancy.

Thorn describes 8 cases of myoma of the pregnant uterus in which the delivery was spontaneous four times. One of the cases had undergone central necrosis during the fourth month, as a result of which there were extensive peritoneal adhesions.

Laparotomy revealed an acute peritonitis. After separating the adhesions the tumor, which was the size of a small fist and violet colored, was excised along with two smaller ones. Pregnancy went on to term and the puerperium was normal.

Another case presented severe peritonitic symptoms during the third month of pregnancy. Laparotomy was performed and a dark purplish myoma the size of a fetal head was found. It was attached by a short, broad pedicle and twisted. There were no adhesions. The tumor was excised very deeply so that the sutures extended close to the mucous membrane. Recovery was perfect and pregnancy continued to about four weeks before term, when the stillborn fetus was spontaneously delivered.

In two cases forceps were applied on account of an absence or weakness of pains. The tumors were the size of a fist and a fetal head respectively and extended down to the cervix.

(1) Muench. med. Woch., No. 34, 1905.

Version was performed twice on the same woman with an interval of four years. The indication was a transverse presentation. The tumor was the size of a child's head. The second time Thorn did not see the case until after the woman had been in labor six days. Her condition was most critical. She had high temperature, very rapid pulse and a distended abdomen, very sensitive to pressure. From the vagina there came a very foul discharge which originated in the necrotic myoma. It was enucleated and version performed, though it was supposed that there was an incomplete rupture. After the placenta was delivered intestines rolled out of a large tear in the posterior wall. The uterus was irrigated with several quarts of lysol solution, the intestines and lower abdominal cavity were washed and irrigated with saline solution and an iodoform gauze drain introduced. Contrary to all expectations the woman recovered and was discharged at the end of five and a half months.

Thorn advises conservatism in the treatment of myomatous uteri during pregnancy and to defer operative interference to as near term as possible. Two of his cases illustrated, though, the great tolerance of the pregnant uterus to operative manipulations, the pregnancy having gone on uninterruptedly.

In several other cases, though, the tumor was large and apparently forbad the engagement of the head, but it was either compressed or pushed aside and the head entered the pelvis. Thorn attributes this to the structure of the tumor being similar to a great extent to the uterus itself, permitting stretching or compression.

[The Editor also inclines toward the expectant treatment of uterin myomata in pregnancy. One should be prepared to meet all complications during the labor, wherefore the Editor always insists on such patients being confined in a lying-in hospital.]

Ovariotomy During Pregnancy. Graefe[1] has collected 22 cases of ovariotomy during pregnancy, reported since the publication of Heil's statistics and adds 4 of his own, making 26 in all. The mortality was nil and pregnancy was interrupted but 4 times. The mortality during preg-

(1) Zeitsch. f. Gyn. u. Geb., B. LVI, H. 3.

nancy is actually less than at other times, which may be explained by the fact that malignant ovarian tumors usually prevent conception. The danger of interrupting pregnancy too soon may be avoided by deferring the operation until the woman is practically or nearly at term.

It has been argued by Fraenkel that double ovariotomy before or during the fourth month would result in abortion, but this is disproven to an extent at least by 23 cases collected by Graefe of which only 4 aborted, a percentage the same as after unilateral ovariotomy.

Abdominal Total Extirpation of the Pregnant Uterus. The patient, a II-para, was 42 years of age; her first labor occurred 18 years previously. After being in labor for 5 days and after an attempt had been made to deliver her under anesthesia, Gutbrod[1] was called in and made a probable diagnosis of an impacted myoma or a solid ovarian tumor as the cause of hindrance to labor. The patient's temperature (axillary) was 103.5 and her pulse 144.

Laparotomy revealed a very markedly retroflexed uterus which was bound down by extensive adhesions almost in its entirety. The upper third alone was not involved. After considerable effort and time the uterus was freed and on account of the existing septic conditions was entirely removed. The patient's condition soon improved, but, unfortunately, on the 5th day laparotomy had to be performed again on account of an ileus, and she died 8 hours later.

Examination of the specimen revealed the fact that the uterus had been retroflexed as a result of perimetritic adhesions. The obstruction to labor was due to the thickened posterior lip (1½ in.) being adherent to the tissues above the symphysis.

The Obstetric Hemorrhages.

Accidental Hemorrhage. Three cases of accidental hemorrhage are reported by Jardine.[2] The first occurred in a II-para with a contracted pelvis, a conjugata vera of 5.6 cm. She was admitted suffering from hemorrhage.

(1) Zeitsch. f. Gyn. u. Geb., Band. 55.
(2) Glasgow Med. Journ., August, 1905.

She was very pale, pulse weak, vagina full of clots, abdomen distended, but no placenta could be felt. After examination her condition became much worse, but there was no bleeding from the vagina. Cesarean section was performed and a living baby delivered. The placenta was found partly separated and numerous clots adhered to it. Recovery.

The second case was a VI-para. During the fifth month of pregnancy she had a number of hemorrhages, accompanied by passage of clots. When examined the abdomen was found distended by a tumor of doughy consistency. There was no dilatation and the hemorrhage had ceased. The possibility of a molar pregnancy presented itself. A week later there was again a sudden flow of dark, syrupy blood. The os was then dilated and the lower part of the uterus was found full of dark, clotted blood. The placenta was found partly detached at the lower border. The ovum which appeared to be of four months' growth occupied less than one-third of the uterine cavity, the remainder being filled with blood. Recovery perfect.

The third case was at term. The patient was a VI-para who had suddenly become pale and partly collapsed without any over-exertion. There was no external signs of hemorrhage. The abdomen was distended, the fetal parts could not be distinctly felt and the os was half dilated. Patient complained of considerable pain in the abdomen. The os was dilated manually and version performed. The placenta was found detached and two very large clots were removed. One of them was about the size of an ordinary liver and resembled it in shape. Owing to poor contractions and some oozing the uterus was packed with iodoform gauze, which was allowed to remain 48 hours. She recovered eventually but slowly, though it was feared that pernicious anemia would intervene.

Ablatio Placentæ. R. W. Holmes[1] reports two cases of premature separation of the placenta. The first patient suffered during pregnancy from dyspnea caused by hydramnios. While sitting down the patient noticed a sudden gush of blood and fell fainting to the floor. External examination, a half hour later, showed a characteristic

(1) Am. Jour. Obstet., December, 1905.

accessory tumor extending from nearly a hand's breadth below the umbilicus to two fingers' breadth above that point. The os admitted two fingers, the membranes were tense and no placenta was palpable. The cervix was immediately dilated manually and a dead child was extracted by forceps. Following the delivery of the placenta nearly a quart of dark blood clots escaped. The mother made a satisfactory recovery.

The second case developed eclampsia and preparations for operation were carried out. Externally the uterus was found to be tense but of regular contour. There was a slight vulvar hemorrhage. Previous to the labor the patient had noticed an escape of a clear serum, similar to liquor amnii. Following manual dilatation a dead fetus was extracted with the forceps. The placenta was removed manually, together with a number of large blood clots. The patient later succumbed to the eclampsia.

Abruptio Placentæ. J. B. De Lee[1] includes under this definition several varieties of placental detachments.

[It has long been felt that a short term should be found to take the place of the "Premature Detachment of the Normally Implanted Placenta." A Latin term that covers these points of the definition—*i. e.,* prematurity, suddenness, tearing away, and normal situation of the placenta—would be equally cumbersome. The Editor suggests *Abruptio Placentæ.* Etymologically "abruptio" means a violent tearing or breaking away from internal force.]

I. Premature separation of the placenta developed in the lower uterine segment or the zone of dilatation.

II. The separation of the placenta occurring a few minutes before the delivery of the fetus resulting in a severely asphyxiated or a dead child.

III. The placental separation in twin cases after the delivery of the first child. As both child and mother are endangered, a rapid diagnosis from the external hemorrhage and the condition of the heart tones of the second child, must be made and prompt treatment instituted.

IV. In some cases of transverse presentation or prolonged labors in head presentations the placenta may

(1) Am. Jour. Obstet., December, 1905.

become separated, but because of the firm contractions of the uterus around the fetus not much hemorrhage occurs.

V. Finally there is the premature separation of the normally implanted placenta occurring in labor or the later months of pregnancy.

[Only the last one mentioned, the separation of the normally implanted placenta, during pregnancy or labor, deserves to be specifically called *Abruptio Placentæ.*]

From an experience of twelve cases of premature separation of the placenta, excluding the cases of placenta previa, the writer recommends the following treatment:

1. If the cervix is effaced and the os dilated, deliver at once.

2. If the cervix is effaced and the os partially dilated, procure complete enlargement of the os by manual dilatation, the Bossi dilator or by Duhrssen's incisions and extract at once.

3. If the cervix is neither effaced nor dilated, deliver at once by vaginal or abdominal Cesarean section.

4. If the symptoms are not very threatening or the surroundings not such as to warrant operative procedures, firmly tampon the vagina with dry cotton, use the abdominal binder, give ergot and wait.

5. Preserve the integrity of the membranes until just before delivery. If the liquor amnii escapes, insert a colpeurynter or a Barnes' bag.

6. Treat the anemia while waiting.

7. During the third stage be ready promptly and effectually to empty the uterus and treat the hemorrhage, remembering that the utero-vaginal tamponade is a very valuable method.

The Treatment of Accidental Hemorrhage. A. V. Macan[1] claims that in the treatment of accidental hemorrhage one should attempt to arrest the bleeding without emptying the uterus by plugging the vagina, a method still advocated by the Dublin school. The usual tamponade is inserted after a firm abdominal binder has been applied and lastly a perineal bandage is pinned to the binder. In this manner pressure is made on the front of the uterus and abdomen by the tight binder and the uterus is forced

(1) Brit. Med. Jour., Oct. 22, 1905.

downwards as well as on to the firm mass of plugs. The patient is then left alone unless pains come on, the plugs begin to bulge, hemorrhage comes through the plugs or if the patient has any faintness.

If it is necessary to deliver, Macan prefers vaginal Cesarean section to all other forms of accouchement forcé where the cervix is closed. The great danger of delivering the fetus through the pelvis when the cervix is only partially dilated is the difficulty of judging how much time the operator can take to effect dilatation. There is no set of rules which will tell whether to allow a woman to die of hemorrhage or run the risk of causing her death by effecting delivery through an incompletely dilated cervix.

Delivery of Placenta Before Fetus. H. A. Haskell[1] briefly reports a case to which he was called one-half hour after the delivery of the placenta. The fetus presented by the breech. The mother was weak and pale, but her condition was not alarming. In seventy minutes after the placental delivery an exsanguinated male fetus was delivered, apparently at term.

There is a vague history of hemorrhages occurring during the previous months of pregnancy but little during the labor.

C. E. McReynolds also reports the case of a woman six months pregnant who had taken an abortefacient to relieve her because of illegitimacy. Severe pains and hemorrhage followed. The placenta was visible at the vulva when first seen. The six months' fetus was delivered manually.

These two cases are apparently instances of a placenta previa, although the histories are so vague as to give but little information. Prolapse of a normally implanted placenta is very rare and is accompanied by severe general symptoms, notably hemorrhage and shock. Premature separation of a placenta previa is more common and is more liable to occur in placenta preva centralis. The interesting part of these cases was the absence of hemorrhage of any extent. This might be accounted for by a premature coagulation in the placental and uterine sinuses.

Placenta Previa. R. Warren[2] summarizes a series of 91

(1) Journ. Amer. Med. Assn., July 15, 1906.
(2) Lancet, Feb. 3, 1906.

cases of placenta previa with a mortality of 6 mothers, 6.3 per cent; and of 93 infants, 49 died, or 52 per cent. None of the primiparæ mentioned in the series died, although the mortality in such cases is considerable. Twin labors occurred twice, three of the children and one mother dying. Prolapse of the cord occurred in 3 cases out of 54 in which the de Ribes bag was not used and in 4 cases out of 40 where it was used. Postpartum hemorrhage occurred in 14 cases; in 4 the placenta was adherent, in 2 there was atony uteri. These last two mothers died. As regards treatment, in 27 cases watchful expectancy was followed in conjunction with various minor methods of treatment. Twenty-one cases were treated by internal version or extraction by the breech in podalic presentations. Of these, 5 mothers died; of the 22 children, 14 died. Forty cases were treated by the insertion of the de Ribes bag. None of the mothers died, but 25 of the children were lost. There was no case of complete placenta previa in the series.

Placenta Previa Centralis. Auderodias[1] reports two cases of placenta previa centralis which he observed in the course of two weeks. The first case was a III-para who had aborted in the preceding pregnancy. The puerperium was abnormal, necessitating curettage. During the last pregnancy she had a series of profuse hemorrhages from the seventh month on. Labor finally began about a week before term with the loss of considerable blood. The cervix was not effaced and the internal os was closed, hence an expectant form of treatment was instituted. In the course of a few days the anemia became so pronounced and the fetal heart tones so irregular that manual dilatation and version by the Braxton-Hicks method were performed. The membranes could not be felt, hence it was necessary to detach a portion of the placenta before they could be reached. Unfortunately a loop of the cord came down and the fetus was dead when extracted about twenty minutes later. In spite of good uterine contractions there was a very severe postpartum hemorrhage which was not controlled until the uterus and vagina were tamponed.

(1) Journ. de Med. de Bordeaux, No. 25, 1905.

The puerperium was normal and the patient was discharged in good condition on the twelfth day.

The second case was a V-para, who flowed very freely for two months after each labor and abortion, with the result that she became very anemic. She began to flow considerably at intervals from the sixth month on, but perceived no contractions until the beginning of the ninth month. The physician who was called found the cervix effaced and the os dilated about the size of a quarter. The placenta could be felt but not the membranes. The presentation was cephalic. It was not until two days later that Auderodias was called and found the same conditions as above described, excepting that the fetal heart tones were no longer heard and the patient was very anemic. The pains were very weak. The os was dilated by the Bonnaire method but it was exceedingly difficult to reach the membranes, which was finally accomplished after detaching a considerable area of the placenta. Version was easily performed and a macerated fetus was extracted. The uterus was irrigated and the lower segment and vagina were tightly tamponed. For the first four days the temperature varied between 101.3 and 103.1° F. It then dropped to normal and the patient was discharged three weeks later, but still very anemic.

Jardine[1] reports a case of *hydrorrhea gravidarum and complete placenta previa.* The patient was a primipara who had suffered from endometritis before her marriage and while riding in a street car during the fifth month of pregnancy had the misfortune to have a man thrown into her lap by a sudden lurch of the car. She suffered considerable pain, accompanying some uterine contractions, but there was no discharge of any kind from the vagina. From this time on the pain and contractions recurred off and on. The abdomen seemed to become distended after several contractions and there would then be a discharge of considerable clear fluid which afforded relief. The fluid was stained red but once. The os was closed. The discharge finally became less and eventually ceased. After labor had fairly begun and the os just admitted one finger, the patient bled very freely and it was discovered that

(1) Glasgow Med. Journ., August, 1905.

there was a central insertion of the placenta. The vagina was tamponed and later a Champetier de Ribe's bag was introduced which completed the dilatation in one hour, when the hand was passed through the placenta, version performed and a living child extracted. During the seventh month there had been considerable bleeding which ceased with rest in bed. During the last two months she passed three large clots of blood at different periods which were preceded by severe contractions.

The placenta was delivered with the membranes intact. Jardine believes that the low insertion of the placenta saved the woman from an abortion, because if it had been located in the fundus it must have certainly become dislodged. The passage of clots was an unusual occurrence in placenta previa, and so was the continuation of pregnancy to term, which he seeks to explain by the greater and longer pressure of the head against the placenta which was favored by the small amount of liquor amnii present and which checked excessive bleeding. He also assumes that the clear discharge during the middle months was liquor amnii and not a secretion from the decidual glands.

Missed Labor with Placenta Previa Centralis. A case of missed labor with a central placenta previa is reported by Chvojka.[1] The patient was a large, well built VI-para. Her first labor was protracted and resulted in the delivery of dead twins. The second labor was normal. The third and fourth pregnancies terminated with abortion. The fifth resulted in the delivery of a dead, well and largely developed child. The placenta was removed manually. The puerperium was normal each time, excepting that after the first abortion the uterus became retroflexed.

In the present case labor pains began about three weeks after the expected time. They were very weak and were accompanied by violent movements on the part of the fetus. They soon ceased and did not reappear until two months later, when after continuing intermittently for several days it was found that the soft, compressible head was at the outlet with the os tightly grasping the neck. The child weighing 11 pounds was finally extracted with some difficulty. A small amount of slightly thickened, foul smell-

(1) Zentralb. f. Gyn., No. 51, 1905.

ing liquor amnii escaped at the same time. At no time was the rupture of the bag of waters observed. The pains now became very severe, but the placenta did not come. It was then found that part of it protruded into the vagina whilst the larger part was still adherent to the lower uterin segment. The surface area of the placenta was about twice as great as that of the membranes, hence the placenta must have occupied the greater portion of the inner surface of the uterus. It was thin, atrophic, and rough as though strewn with sand.

The ineffectiveness and weakness of the pains is explained by the fact that the placenta covered the greater part of the uterin wall and did not permit normal contractions to take place. The pressure of the head of the very heavy child sufficed to prevent hemorrhage but also operated against the fetus in that the circulation was more and more cut off by the advancement or sinking of the fetus, the head was eventually driven through the placenta by the pains which were probably stimulated reflexly by the absorption of products of decomposition which had set in.

Triplets with Placenta Previa. Czyzewicz[1] reports a very rare and interesting case of full term, living triplets with a placenta prævia lateralis. The patient had 11 normal single labors and lastly an abortion two years before this pregnancy. The abdomen was enormously distended (47 in.) and did not permit a very satisfactory examination. Numerous small parts were felt, and heart tones were heard in two areas with a zone between them in which they could not be heard. Internal examination produced a severe hemorrhage which was combated by tamponing, though the source was not determined at that time. Labor was very slow, but after the rupture of the first membranes the occipital presentation became a face but was delivered in two minutes after rupture of the membranes; the second child presented by the breech and was extracted; the third child lay transversely and was delivered by version and extraction. They weighed 2,900, 2,800 and 2,700 gms. respectively. Two were boys and had a common placenta with but one chorion. The girl had a single

(1) Zentralb. f. Gyn., No. 43, 1905.

placenta, though there were evidences (placenta circumvallata) of a possible twin pregnancy in this case. It is of interest to note that the triplets were full term, living, and of about the same weight.

Treatment of Placenta Previa. In cases of placenta previa where the dilatation is insufficient for version or the use of the rubber bags, Fritsch[1] resorts as customary to the vaginal tamponade. He places the woman, with the bladder and rectum empty, in the Sims position instead of the dorsal, claiming thereby that the uterus falls forward and permits the introduction of a larger tampon and consequently more pressure is exerted upon the uterus when the patient is again placed on the back.

The author always uses the fingers in tamponing. Antiseptic measures must be continually resorted to by sponging the external parts very freely with a lysol solution during the operation. The extraction of the fetus must be performed slowly and if the cervix resists the passage of the head it must be carefully stripped or lifted over it.

Demelin[2] concludes that *version is a proper procedure* in cases of placenta previa with hemorrhage. It was performed in about one-third of the cases collected by him. The high mortality of the fetus, 35.5 per cent, is not to be attributed to the version itself in all cases, but to accidents accompanying the condition. Extraction should be deferred until the dilatation is complete or sufficient to prevent tearing the cervix or lower uterin segment.

When it becomes necessary to wait for dilatation the membranes should be ruptured, the cervix and vagina tamponed, or a foot brought down by the Braxton-Hicks method. When the placenta is located over the os it is better to loosen it at one side until the edge is felt and then rupture the membranes than to bore through the placenta. The injection of a normal saline solution is recommended to combat the anemia which may result. If the woman is exsanguinated ether should be used instead of chloroform.

R. W. Holmes[3] *objects to the performance of Cesarean section* for placenta previa because the child is nearly always premature, is almost always born asphyxiated and its

(1) Deutsche med. Woch., No. 47, 1905.
(2) L'Obstetrique, September, 1905.
(3) Journ. Am. Med. Assoc., May 20, 1905.

strength compromised by hemorrhage. The low insertion of the placenta generally causes an atypical third stage from an inability of the uterine muscle to retract. The ideal conditions for the section are rarely obtainable in placenta previa cases as the preparations for operative treatment are usually hurried and may be done in unsatisfactory surroundings and the omission of some details might result in maternal injury. Placenta previa patients are peculiarly susceptible to infection because of the near relation of the placenta to the infective vagina and the rich lymph supply to the lower uterin segment. As rigidity of the cervix is a rare indication for the operation, no case being found in 606 modern cases, any attempts to dilate the os uteri would make the case unfavorable, as Cesarean section should be carried on before any vaginal intervention has been attempted.

Holmes concludes that Cesarean section lowers the fetal mortality 30 per cent, but raises the maternal death rate threefold, so that one mother is sacrificed to save one baby. In cases of pelvic contraction with placenta previa, Cesarean section is indicated, not by previa, but by the bony dystocia. The earlier in pregnancy the labor occurs, the more may pelvic contraction be disregarded. Cesarean section for placenta previa will never have so low a mortality as when done for contractions of the pelvis, on account of the vaginal examinations necessary to establish the diagnosis and the frequent presence of a tampon inserted as a temporizing measure. The most appropriate cases, therefore, will be where the operation is demanded irrespective of the fetal conditions. It should only be done as a last resort and should be followed by removal of the uterus as a prophylactic against hemorrhage and infection.

[The Editor cannot agree with these sweeping conclusions. An indication for Cesarean section will prevail in cases of placenta previa centralis in a primipara in good condition, with a closed cervix, and under favorable external circumstances.]

Rupture of Membranes Thirty-five Days Before Confinement. Genet[1] reports a case of premature rupture of the membranes followed by the escape of liquor amnii

(1) Lyon Médical, April 29, 1906.

without terminating pregnancy. Labor did not terminate until 35 days later. The fetus weighed 2,650 gms. (nearly 6 pounds). The point of premature rupture could be plainly seen in the membranes. It was the size and shape of a dime and was situated about 2½ in. from the larger opening through which the fetus escaped.

PART II.

LABOR.

Anesthesia During Labor. For a very short period Müller[1] recommends the use of chlorethyl which acts very rapidly. It is administered by dropping it a drop at a time directly into the Esmarch mask, which is to be covered with a very close woven piece of goods. From 5 to 10 drops usually suffice, though its use, for instance, while the head is passing over the perineum should not continue more than 1 or 2 minutes. For longer periods, it is advisable to begin the anesthesia with chlorethyl and continue with chloroform. The amount of the latter required is very much reduced. Should the patient awake a few drops of chlorethyl to again secure toleration are all that is necessary.

With alcoholics or those who resist unusually, Müller recommends, in cases of anticipated long anesthesia, the injection of 0,003 to 0,01 of morphin or—0,005+0.00015 scopolamin about $\frac{3}{4}$ to 1 hour before.

Course of Labor After a Preceding Vaginal Cesarean Section. Rühl[1] reports four cases of labor that followed a preceding vaginal Cesarean section as proof that the vaginal hysterotomy exerts no unfavorable or disturbing influence upon subsequent labors.

In one case, the vaginal Cesarean section had been very difficult and was complicated by a tear into the parametrium, but the subsequent labor proceeded very smoothly.

In the second case it was found necessary, during the beginning of pregnancy, to separate an adhesion of the uterus to the scar which prevented the former from rising, by an incision. Abortion, as expected, did not occur, and

(1) Deutsche med. Woch., No. 50, 1905.
(2) Muench. med. Woch., No. 11, 1906.

the case went to term, and terminated very easily and quickly.

In the third case it was found necessary to remove the placenta manually, though a connection between the former operation and the adherence could not be established.

In the fourth case the cervix was unusually rigid, and the labor was severe and tedious. The vaginal section could not be blamed for this because this very same condition had been the indication for the operation in the preceding labor.

Accurate Diagnosis in Vertex Presentations. H. M. Stowe[1] emphasizes the importance of making accurate diagnoses in cases of labor that require operative intervention, especially the forceps. When the case is seen late in the second stage complicated by moulding, edema and a thick caput succedaneum, it is frequently very difficult to diagnose the position of the head, in cephalic presentations, by palpation of the fontanelles and sutures. It is in just this class of cases where an accurate diagnosis is most necessary and where extraction must be made at the least expense to the integrity of fetal and maternal structures.

Stowe diagnoses the position of the vertex by the ear and corroborates his findings by palpation of the fontanelles and sutures.

The fact that the patient is chloroformed and the cervix dilated renders ear palpation much easier. If the ear lies under the os pubis, the head must lie transversely in the pelvis. If the ear lies in the transverse diameter of the pelvis, the head must lie in the antero-posterior diameter. In other words, the sagittal suture always lies in a diameter perpendicular to the one occupied by the ear.

As the finger of the examiner passes from the face to the occiput, it necessarily passes over a rough area at the site of the external auditory meatus, just in front of the lobe, while as the finger passes from the occiput to the face, it traverses a smooth area until it reaches the lobe. Again a flap is easily detected as the finger passes from the occiput to the face, and as the finger passes backwards and forwards over the ear a few times it is easy to tell on

(1) Surg. Gynec. and Obstet., June, 1906.

which extremity of the sagittal suture the occiput lies. Given the diameter in which the sagittal suture lies and the location of the occiput, and the diagnosis is cleared up. Flexion of the head must be told by palpation of the fontanelles, as the ear gives no information on this subject.

Occipito-Posterior Presentations. Geo. Geddes[1] claims that not enough importance is placed upon the value of making a diagnosis of occipito-posterior presentations early in labor.

He finds in a series of 300 cases 10.5 per cent of the total vertex presentations occurred in multiparæ, while 20.8 per cent occurred in primiparæ. In attempting to explain the reason for the greater frequency in primiparæ, he argues as follows:

In primiparæ, the tense abdominal wall tends to force the long axis of the fetus against the posterior wall of the abdomen. If the head should lie in the inlet in the occipito-posterior position, the force of the powers of labor will necessarily be directed more over the anterior portion of the head, and as a result the normal flexion of the head will be prevented or an actual deflexion might take place. In multiparæ, the long axis of the fetus falls forwards and hence the forces of labor act on the posterior end of the lever and as a result flexion occurs and anterior rotation of the occiput under the os pubis is more prone to occur.

According to this theory, women who are accustomed to perform hard labor up to the time of their confinement enter upon their labor with more strength in the abdominal walls and hence flexion of the head is more common and occipito-posterior positions rarer, while those women who enter upon their labor with weak abdominal walls are predisposed to deflexions and the retention of the occiput posterior.

Diagnosis of this condition is facilitated by the history of false pains that occur for a longer or shorter period before labor at irregular intervals and associated with more or less slight dilatation of the cervix. Because of the inability of the head to completely fit the pelvis, an early rupture of the membranes and a subsequent leakage of the liquor amnii is common. Attention is also called to

(1) British Med. Jour., March 10, 1906.

the presence of the "parchment os." The anterior lip is pendulous, while the posterior is thinned out. The cervix seems to hang free in the pelvis between the head and the outlet.

Conduplicatio Corporis. Zikmund[1] reports a very rare case of delivery by the "jack-knife" method. The patient was an VIII-para who had been in labor 14 hours when first seen. The shoulder was impacted and the arm prolapsed. Operation was refused by both man and wife because she had been repeatedly delivered spontaneously of very large babies. During the discussion, the shoulder came down still lower and in a short time, a fetus (recently dead and weighing about 8½ pounds) was delivered very suddenly. The back was bent in the middle. The right shoulder came first, then the head and trunk, and lastly the breech, together with the legs and the left arm. The pelvic measurements were 27, 30.5, 35, 19, c. d. 13 cm.

Clinical Report of the Rotunda Hospital. E. H. Tweedy,[2] in the last report, gives some interesting statistics. The total morbidity—that is, the rising of temperature to or above 100.8 F.—was 159 cases, or 8.42 per cent, as compared with 8.6 per cent the preceding year. Out of these cases there were 32 seriously ill from septic infection, and of these eight died, three of pyemia and five of acute septicemia. In the suspected cases of infection a smear is taken from the uterine cavity by an aspiration syringe and is sent to the laboratory. The uterus is then douched with peroxid of hydrogen, salt solution or cyllin solution. If there is no relief in twenty-four hours, the patient is transferred to the isolation ward and the uterus again douched. If the pathologic report is negative, the gloved hand is introduced to remove any pieces of placenta or decidua present. Constitutional treatment was given to all, tincture of the perchlorid of iron in 40 minim doses was given t. i. d., while in selected cases, calomel, mercurial inunctions, antistreptococcic serum and Credé's ointment were given.

During the year 4,172 cases were delivered with a mater-

(1) Wiener klin. Woch., No. 50, 1905.
(2) Dublin Jour. Med. Sci., June 1, 1905.

nal mortality of 19. Some 141 children died, including those premature and macerated.

Regarding the presentations, we find that 6 were face; 33 posterior occiput; 3 brow; 115 breech and footings; 14 transverse; 37 twins, and 12 cases of prolapsus funis. Eclampsia occurred 10 times; accidental hemorrhage, 20; unavoidable hemorrhage, 11; postpartum hemorrhage, 39 times.

Labor was induced 5 times; version performed, 23; forceps, 104; perforation once; decapitation once; manual removal of placenta, 60; Cesarean section once, and symphysiotomy once.

The ten cases of eclampsia were cured and the treatment was as follows. A stomach tube was passed through the mouth if the patient was unconscious, and through the nose if semi-conscious. The stomach is washed out and a quart of slightly saline hot water, together with croton oil in 4 or 5 drop doses or some other purgative, is poured in by means of the tube; ¼ grain of morphin is injected every two hours for four doses or until the convulsions have ceased. Thorough and rapid stimulation of the excretory organs is carried on in all cases. In severe cases, normal salt solution, from one to three pints, is infused into the inframammary cellular tissue.

The Contraction Ring and Internal Os. According to Martin,[1] Bandl's contraction ring is the lower border of the contractile musculature of the uterus. It is not an inconstant phenomenon of contraction nor is it due to severe, repeated, or even tetanic contraction, but, on the contrary, is a purely physiologic condition which may be observed at every normal delivery. When the lower segment is on the stretch, *e. g.*, while the membranes are still intact, it may be felt in the increasing thickness of the uterine wall as the hand ascends, and when the lower segment is relaxed, as in the third stage, it may be felt above an apparent tumor like a protuberance.

Martin conducted his experiments very ingeniously. Right after delivery he placed silkworm gut sutures in the cervix, the internal os, and the contraction ring, and after periods of days, varying, of course, he examined with

(1) Arch. f. Gyn., B. 76, H. 1.

specula to see how the sutures had disposed themselves. After the puerperium had been completed he removed the loops of silk gut.

Whereas the muscle fibers of the fundus contract during labor and are so arranged that the thin lamellated structure of the pregnant uterus readily becomes transformed into the thick, compact layers of the non-pregnant uterus, the lower uterin segment, on the contrary, remains passive and for a long time thin and relaxed, until the puerperal period is pretty well established.

The uterin cavity is separated from external influences immediately after labor, especially by the contraction ring. It is only in the course of the puerperium that the cervical ring and that portion between it and the contraction ring (the so-called "lower uterine segment") under the influence of the shortening and rearrangement of the muscle fibers are involved in the formation of the so-called "isthmus." The lower uterine segment, especially the inner layers, are therefore formed from the cervix.

The variations in thickness of the lower uterine segment, before and immediately after labor, demonstrate the fact that effacement of the cervix occurs during the last weeks of pregnancy. The more tense the walls of the uterus and the abdomen, the more the fibers of the cervix are lengthened and the cervix proper shortened.

The effacement of the cervix is not found under certain conditions such as induced premature labor. This is an indication of the unpreparedness for labor at that time. This lack of effacement is constantly observed in placenta previa, often in old primiparæ, chronic leucorrhea, and prolapse of the uterus. It leads to premature rupture of the membranes, prolapse of the cord, slow labor, relative weakness of the pains, and tetanus uteri. The best treatment and preventive is the colpeurynter or de Ribes bag.

Pathology of Labor.

Uterin Inertia and Its Treatment. G. L. Brodhead[1] gives three main rules for treatment during the first stage. First, sustain the general condition of the patient; second, stimulate the uterin muscle and dilate the cervix, and, third, produce relaxation and sleep. The general condi-

(1) N. Y. Med. Journ., Jan. 13, 1906.

tion of the patient is to be kept up by giving fluid nourishment every two hours with stimulants if necessary. The patient is to be kept out of bed as much as possible, if it is not too fatiguing. The best drugs to stimulate the uterus are strychnin and quinin, the former in doses of 1-30 grain every two hours, and the latter in doses of 5 grains every three hours. The most valuable procedure for relieving uterin inertia is the use of the Champetier de Ribes bags. This treatment is especially useful in dry labors and in face and breech presentation. To induce sleep, 20 grains of chloral by stomach or rectum repeated once in half an hour or morphin may be used. If the patient is a highly nervous woman, a few whiffs of chloroform or ether will be attended by excellent results. After the patient has rested well, the use of strychnin and quinin may be resumed.

In uterin inertia during the third stage, ergot is given by the mouth as soon as the fetus is born; if the hemorrhage is severe, the ergot is given hypodermically. Massage of the uterus is maintained vigorously. A hot vaginal douche of normal salt or weak lysol at 116° F. is given; if the hemorrhage is not checked, the douche point is carried up to the fundus and the douche continued. If the bleeding still continues, a hot intrauterin douche of a 2 per cent solution of acetic acid is given. In the obstetric satchel a 4 oz. bottle of Squibb's 80 per cent acetic acid is carried, 2 oz. of which added to three quarts of water make the required solutions. If this treatment fails, the uterus is to be firmly tamponed with plain or 5 per cent iodoform gauze.

Treatment of Post Partum Hemorrhage. R. C. Norris[1] believes the Credé method of placental expression fails with many physicians because it is attempted too soon after delivery, before the blood in the uterine sinuses has had time to clot and become firm. If there is no bleeding ten or fifteen minutes should elapse before any attempt is made to express the placenta. A dose of ergot is administered as soon as the second stage is over, and before any treatment of the third stage is attempted.

Norris believes the theoretical objection to ergot before the uterus is completely emptied is fallacious, as the

(1) Jour. Am. Med. Assoc., Jan. 13, 1906.

uterine muscular fibers are overstretched and paralyzed for several hours and the only effect of the ergot for that time is on the upper segment.

The routine administration of ergot is advised from a prophylactic point of view, as it helps to maintain firm contraction during the early days of the puerperium, and in a measure prevents the introduction of toxins by way of the lymphatics and blood vessels.

The use of Fritsch's "rational bandage" is recommended in cases where instant treatment is imperative to save the mother's life. The empty uterus is flexed over the pubic bone and pads are placed in the depression back of the uterus and supported by a bandage. The uterin cavity being obliterated, immediate hemostasis results, and nothing is done for twelve to twenty-four hours.

When the hot douche fails, and external and internal manipulation do not arrest the hemorrhage, the one thing to do is immediately to tampon the entire parturient tract from fundus to outlet. The use of iodoform gauze is to be avoided if possible. A good method is to impregnate the tampon with a solution of adrenalin as the medicament aids in promoting a firm clotting, and is a good remedy for shock.

[The treatment of post-partum hemorrhage is of a delicate nature and requires great discrimination and skill. In general the Editor subscribes to Brodhead's views. Ergot is never used by the Editor until after the placenta is expelled, though, since its action requires 15 to 20 minutes, there would be no objection to its administration if the accoucheur were certain the placenta could be removed well within this period. If the hemorrhage does not cease on the delivery of the placenta, the Editor removes all clots and membrane from the uterus and at the same time administers a brisk external and internal massage to the organs. In the meantime a hot 10 per cent lysol douche has been prepared. Unless the uterus contracts and retracts promptly (N. B. not the presence of hemorrhage alone), the hot douche is administered. If this fails to cause the uterus to contract and stop the flow the utero-vaginal tract is firmly packed with $\frac{1}{2}$ per cent lysol gauze. No iodoform is used. The woman is not allowed to lose much blood. It is astonishing how much blood a woman

can lose in a few minutes, and therefore no time should be wasted by half-way measures.]

Rupture of Uterus.

Spontaneous Rupture of Uterus During Pregnancy. Hellendall[1] reports a rare case of rupture of the uterus during pregnancy. It is the third case of its kind reported in the literature. The patient, an XI-para, 42 years of age, had signs of a perforative peritonitis upon admission. Pains soon set in and a five-months' fetus was delivered. The Crédé method being inefficient to deliver the placenta, the hand was introduced and a protrusion was felt in the upper part of the fundus, which contained an opening that easily admitted the hand into a diverticulum. The placenta lay in it already detached and was removed without difficulty. It was then found that there was an opening, admitting two fingers, in the upper part of the sac which communicated with the peritoneal cavity. A vaginal hysterectomy was then performed, but the patient died four hours later.

Microscopic examination revealed the fact that the sac consisted of peritoneum, a few thin muscular fibers, and decidua. The interstitial part of the tubes was normal. The infection was due chiefly to a bacillus resembling the B. coli communis. The infection passed through the amnion into the intervillous spaces and the sac wall and was diffused by means of a thrombo-phlebitis and a perforative peritonitis.

In the course of a spontaneous rupture of the uterus during pregnancy the greatest danger results from the hemorrhage, though too little importance is attached to the danger of infection.

If the membranes are ruptured the character and virulence of the ascending bacteria or of those carried up by the hand must be carefully considered in making a prognosis.

Werth[2] analyzes 11 cases of *rupture of the uterus during pregnancy through the scar produced by Cesarean section,* supplemented by one of his own. The diagnosis in a

(1) Arch. f. Gyn., B. LXXV, H. 3.
(2) Berl. klin. Woch., No. 27, 1905.

number of cases was rather difficult on account of the small amount of internal hemorrhage, which was due to the fact that the product was quickly and entirely expelled through the rent, allowing the uterus to contract firmly and preventing further hemorrhage. This condition was expedited by the favorable location of the placenta, *i. e.,* near the rent. The diagnosis was further complicated by the membranes remaining intact after extrusion of the sac, rendering the external examination more difficult on account of the erroneous impression of a thin walled uterus and the presence of the usual complicating meteorism.

In Werth's case laparotomy was not performed until nearly 70 hours after the first attack of pain. The pain varied with the treatment and the signs of internal hemorrhage were practically negative. Temperature was but a trifle over 100 and the pulse was 100. Abdomen was distended with gas and sensitive to touch. The fetus and placenta were entirely extruded. The Porro operation was performed.

In two of the cases nothing was said about active pains preceding the rupture. In the remaining ten cases, with one exception (when labor pains were present just a short time previous), the rupture occurred without pains being present and, excepting one case, practically at the end of pregnancy. In the case referred to it occurred in the seventh to the eighth month.

In considering the prophylaxis of this occurrence Werth comes to the conclusion that the integrity of the wound depends neither upon the character of the suture material nor upon the location of the incision, but upon the securing of perfect and undisturbed rest of the tissues which can only be acquired by perfect coaptation and the restraining of mechanical disturbances, such as contraction of the uterus to the minimum, *i. e.,* not beyond the physiologic limit. The uterine tampon must necessarily be dispensed with, excepting in cases where atony cannot be overcome in any other way and then the amount of gauze used should be as little as possible. It is further necessary to suture the edges of the wound very exactly and with a minimum amount of tension.

Since Sanger revolutionized the method of performing

Cesarean section in 1882, there have been 7 cases of rupture through an old Cesarean cicatrix reported, according to Prüssmann.[1] He now contributes the 8th. The patient had previously undergone two Cesarean sections and when she was in the 3d month of the 3d pregnancy, she underwent an operation for abdominal hernia. The uterus was then found adherent to the abdominal wall. It was freed from the same and it was found that the scar was linear, very small, and nowhere contracted.

Two weeks before term, whilst in labor, the uterus ruptured and laparotomy was performed immediately. The edges of the wound were resected and it was found that decidual tissue had invaded the musculature and extended to the serosa. In but few places were there any uterin glands and these revealed no changes of pregnancy. Prüssmann believes that though the outer edges of the uterus had healed by first intention, the inner edges had partly separated and allowed the mucosa to develop into the wound, thereby reducing the resistance of the wall of the uterus.

According to Schink,[2] the spontaneous rupture of the uterus through the scar resulting from a *transverse fundal incision* in a previous Cesarean section has been reported in but three instances. He also reports a case occuring in a III-para of 28 who had a Cesarean section performed three years previously on account of a generally contracted flat rachitic pelvis with a conj. diag. of 8½ cm. The Fritsch incision was made and the uterus closed with *two* rows of sutures.

A year and eight months later she was again delivered, but by means of craniotomy on account of a dead child. The following year she again entered the hospital after having been in labor over 24 hours, though the pains had been weak and ineffective. The membranes were not ruptured. Her condition had suddenly become so serious under the influence of a series of severe pains that the attending physicians had her transported to the hospital (a two hours' ride). A history of a sudden severe pain in the abdomen could not be elicited. After diagnosis of rupture had been made, laparotomy was performed and

(1) Zeitsch. f. Geb. u. Gyn., Band. LV.
(2) Zentralb. f. Gyn., No. 32, 1905.

the intact sac was found in the abdominal cavity, together with about 1½ quarts of fluid blood. The fundus revealed a tear through the former Fritsch incision extending clear across. The edges consisted only of serosa and a few fibers of muscular tissue. The placenta was not attached in the immediate vicinity. The wound was again closed and the puerperium was uneventful until the 21st day, when the temperature went up, accompanied by a foul discharge from the uterus. Examination revealed the presence of a strip of necrotic tissue 20 cm. (8 in.) long, to which were attached two silk ligatures. A large exudate was discovered in the left parametrium which opened into the vagina the following day and discharged a large amount of pus.

Schink is of the opinion that the scar was stretched during the previous labor, resulting in the thinness of the tissue at that point. The placenta was not at fault, because it was not near it. Schink does not believe that either incision has an advantage over the other.

[The Editor has performed 11 successful Cesarean sections. Of these two were on the same patient. Two other women were delivered by the Editor in subsequent labors. In one of the cases Fritsch's fundal incision had been made. No bad effects were observed in any of the labors even though one woman had most powerful expulsive pains for 3 or 4 hours and had to be delivered by craniotomy. The scar in the uterus could be seen as a shallow groove, which was drawn in, not bulged outward during each pain.

A second case had a long, hard breech labor, but the uterus could not deliver the 10½ lb. child. Artificial delivery was done. The placenta was adherent to the uterin scar which could be felt as a rough groove. Manual removal of the placenta was necessary. The Editor sutures the uterus carefully in 3 layers. Catgut is used throughout. The first layer takes in the mucosa and half of the musculature, a continuous suture placed quickly to control hemorrhage. The second row is interrupted and takes in the peritoneum and the other half of the musculature. The third row is continuous, broken every inch, of light gut taking in the peritoneum and a small bit of muscle. The sutures are placed close together but are not drawn tightly.]

Czyzewicz[1] reports a case of *spontaneous rupture of the uterus during the first stage of labor with the membranes still intact.* The patient had had four normal deliveries, since which time she acquired osteomalacia, from which she suffered greatly. The characteristic changes were present. After having been in labor for two days she entered the hospital in collapse (the pains had ceased during the trip of about 56 miles). The temperature was 95.5, pulse 128, and barely perceptible. The pelvis was so deformed and contracted (the conjugata vera was estimated at 5 cm. (2 in.) or less) that Cesarean section was performed, but with absolutely no hope of saving the mother, merely obeying the Austrian law which forbids the burial of an undelivered woman.

The uterus was torn transversely in the posterior wall of the cervix through which the intact membranes and the head of the fetus a little higher up could be felt. The uterus was amputated and the remaining genitalia was removed. The exposed tissues, stumps, etc., were all carefully covered with peritoneum and though the condition of collapse continued for three days the patient improved and was able to leave the bed on the 14th day. Her general condition eventually improved.

Saks[2] reports a case of *spontaneous rupture of the uterus* with a cephalic presentation. The patient was a II-para whose first labor (breech presentation) was terminated by perforation of the after-coming head. The puerperium was normal. The pelvic measurements were 22.5, 23.5, 25, 16.5, 9.5, and c.v. 7.5 cm. (generally contracted). The patient had been in labor 30 hours with a midwife in attendance when Saks first saw the case. The dilatation was three fingers, the membranes had ruptured, and the head presented with the fingers of one hand to the right. These were replaced and an expectant treatment instituted.

Some 36 hours later Saks was again called. During this interval the pains had been quite severe at first, but finally ceased, and the patient had been quiet for the last 24 hours aside from some abdominal pain and vomiting a few times. The patient was found to be lying comfortably in bed, complaining only occasionally of pain in the abdo-

(1) Zentralb. f. Gyn., No. 44, 1905.
(2) Muench. med. Woch., No. 24, 1905.

men. The latter was not distended nor painful to touch. Pulse 108, temperature 100.4°. Heart tones could not be heard. The dilatation had not advanced. The patient was taken to the hospital with the diagnosis of uterin rupture. Laparotomy was performed. Fluid and clotted blood was found in the peritoneal cavity. Some slight adhesions between the placenta and intestines had formed but were easily separated. A large transverse tear was found on the right side extending to the median line of the juncture of the cervix with the uterus proper.

The uterus was removed and the patient made an excellent recovery, the pulse and temperature not going above normal. The bowels moved spontaneously on the third day without the use of laxatives and the urine was readily voided, though there was some incontinency the first few days.

The case is of interest on account of the absence of collapse or symptoms pointing toward a rupture other than the vomiting and occasional pains in the abdomen.

W. H. Cripps[1] details the history of three cases of ruptured uterus during labor treated by *laparotomy and suture*. The first case was a multipara, who had passed through a severe labor complicated by placenta previa. The general condition was bad, pulse 150, temperature subnormal. Examination showed a rent in the right lateral wall with intestines and omentum protruding into the cavity of the uterus. An immediate laparotomy and suture was carried out, but the woman died on the table.

The second case was a breech labor. Rupture of the uterus occurred before extraction was done. A dead child was soon delivered, followed by the placenta and coils of intestines in the vagina. Both flanks were resonant. The general condition was good, pulse 92; temperature 101°. A rent 2½ in. long was found extending from the external os to the right vaginal fornix. The peritoneal cavity contained considerable free and clotted blood. The uterus was found ruptured on its right postero-lateral wall between the layers of the broad ligament. The tear was about 4 in. in length and affected the entire thickness of the wall. The edges were brought together and the uterin

(1) British Med. Jour., June 2, 1906.

cavity drained by a rubber tube. The patient recovered perfectly.

The third case was a multipara under the care of a midwife. After about fifteen hours of labor, rupture occurred, with collapse. Delivery of a dead fetus was effected by forceps. Intestines were found in the vagina. The general condition was good, pulse 100; temperature 98°; pale and restless. The right flank was dull. There was no external hemorrhage. The cervix which had contracted to two fingers was redilated under chloroform and a tear found in the right anterior aspect. Following the cord, the placenta was discovered in the right hypochondrium and delivered manually. The uterin rent and cavity were then packed with gauze. Laparotomy showed free blood in the peritoneal cavity. There was a large tear extending from the fundus to the neighborhood of the internal os. The edges of the rupture were everted so that considerable mucosa was exposed to the peritoneal cavity. The rent was sutured, the excess of blood removed and the abdomen closed. This patient also recovered completely.

These three cases are the only ones that occurred in St. Bartholomew's Hospital in ten years, the first case occurring ten years ago. Cripps makes a plea for immediate surgical treatment of this condition when the general condition of the patient is satisfactory.

A. P. Butt reports in a personal communication an interesting case of *rupture of the uterus with delivery of the placenta before the birth of the child.*

The patient was an ignorant Pole, whose two previous labors were difficult and instrumental. Presumably the lower uterin segment was injured and the scar torn in the present confinement. During this labor no placenta could be felt, even when the cervix was completely dilated. Without warning the placenta was delivered and the patient collapsed. Examination revealed the lower uterine segment and the cervix torn through and the child in the peritoneal cavity. It was delivered with the greatest difficulty, craniotomy being necessary. The patient rallied slowly from the shock and hemorrhage, and after a course of fever recovered. What will happen to the scarred lower uterine segment in a subsequent labor is a matter for conjecture.

Treatment of Rupture of Uterus. Eversmann[1] maintains that in the majority of cases the hemorrhage originates in the placental site and the point of rupture, and in its effects after delivery of the fetus is identical with a post-partum hemorrhage. Very rarely (in about 12 to 15 per cent of the cases) does the hemorrhage originate in the large vessels, such as the uterin artery, necessitating laparotomy. Consequently, he claims that an expectant treatment is indicated in the average case under usual conditions, and that nothing is superior to tamponade in conjunction with a compression bandage. The fetus escapes into the abdominal cavity in only 7.2 to 16.1 per cent of all cases, much less than is usually believed, hence laparotomy is less often indicated. Transportation is harmful. In case laparotomy is indicated, complete extirpation or the suturing of the serosa are the operations recommended.

G. Schmauch[2] states that in the presence of an *actual rupture* the patient must be delivered in a quick and careful manner. Mutilating operations are first in order, craniotomy in head presentations and embryotomy in impacted cross births. Forceps are not, as a rule, to be used because the head is seldom engaged. Version may be used if the foot is easily secured and only a smaller portion of the fetus lies in the abdominal cavity. If the greater portion of the fetus lies in the abdominal cavity, or if the pelvis is obstructed by tumors or deformity absolutely contracting it, laparotomy is called for. These questions are determined mainly by external palpation. After fetal extraction, the first consideration should be the prevention of further exsanguination. If in the patient's home, if the tear is low down and easy of access, the bleeding arteries may be clamped and the laceration sutured. If this is impossible or impracticable, tamponade of the tear is to be performed at once. If the parametrium is opened, it must also be packed. In anterior tears, compression of the uterus in anteflexion against the pubis, and vaginal tampon by means of cotton and bandaging are valuable, while fixation in retroflexion is valuable in posterior tears.

(1) Ark. f. Gyn., B. LXXVI, H. 3.
(2) Ill. Med. Jour., December, 1905.

If hospital facilities are accessible, laparotomy may be done, but if not, the physician must be content with extraction through the natural route and firm tamponades. Sterilized iodoform or silver gauze is preferred for the tamponade, and is needed only to the extent that it aids in packing the tear. It should remain five or six days or longer and is removed piece by piece. An ice bag is placed over the abdomen and absolute rest is demanded to the exclusion of even the slightest movement.

Total extirpation of the uterus is more serviceable when the vaginal portion is torn and has to be sutured. If possible the uterus is to be preserved. In general, where the rupture has occurred some hours previously, total extirpation of the uterus is advisable, while we should be more conservative in the simple wound conditions and in the "clean" cases or those that have not been examined.

["In 6 deaths out of 7,500 consecutive cases in the service of the Chicago Lying-in Hospital Dispensary 3 were due to rupture of the uterus. The Editor believes that many cases of death from "shock," "postpartum hemorrhage," "embolism," etc., are really due to rupture of the uterus. In the treatment of threatened and actual rupture the danger of transportation of the patient must be emphasized. She should be treated at home if at all possible and the treatment should be adapted to the home conditions. Suture from below and tamponade will meet the indicationse oftenest. If the patient is in a good maternity laparotomy will be more often indicated. Opening the abdomen will save an occasional life when tamponade, etc., failed to stop the hemorrhage.]

Miscellaneous Complications.

Rupture of the Symphysis Pubis in Labor. T. B. Eastman[1] details a case of spontaneous rupture occurring after twenty minutes of labor pains when a 9-pound baby was delivered. The noise of the rupture was easily heard in the room. While the puerperium was uneventful, the patient found she could not walk without a sinking sensation in her pelvis and a grating at the symphysis pubis. At the operation a crescent-shaped incision 4 inches in

(1) N. Y. Med. Journ., Jan. 20, 1906.

length and following the curve of the pubic arch was made. The articular surfaces of the bones were well scraped and two holes on either side were drilled through the bone from a point on the anterior surface ½ inch from the articular margin, and emerging on the posterior surface ¼ inch away from the joint. Heavy silver wire was used and the parts brought firmly together. Union was perfect in thirty-six days. This method is a slight modification of the method devised by Faraboeuf for suturing the symphysis after symphysiotomy.

[As a rule the pubis reunites without operation if sufficient time be allowed. The Editor has had 6 cases of rupture of the pubis during labor. All recovered but one who died in 3 days from sepsis.]

Spontaneous Laceration of the Vagina During Labor. These are either complete (perforating) through a fornix into the peritoneal cavity or incomplete through the posterior vaginal wall (pelvic floor) in a longitudinal direction. The latter, in the severer cases, may result in a central rupture of the perineum, *ruptura perinei preanalis,* and in rupture of the rectum. The longitudinal lacerations occur as a result of circular overdistention of the vagina, which in turn is due to tumultuous pains which do not permit the normal, gradual dilatation to occur in so short a time. A large fetal head is not an important factor since the relatively small heads have produced the severer lacerations.

Among the predisposing factors may be mentioned: unusual narrowness and rigidity of the vagina, a tense, unyielding pelvic floor, abnormal tendency of the tissues to tear as a result of inflammatory processes, old scars, lack of elastic fibers, hypoplasia of the internal genitalia, abnormal projections on the pelvic walls, slight pelvic inclination, narrow pubic arch, and a pendulous abdomen. The lateral portions of the posterior wall have a greater tendency to tear than the *columnæ rugarum.* Whether the tear occurs in the right or left sulcus depends upon the position of the head—a right tear if the position is left and vice versa, or as Freund says, the forehead indicates the location and direction of the tear. [The Editor's experience is opposed to this, namely, that the tear is on

the side of the occiput. Indeed the Editor can tell on which side the occiput lay before delivery by the location of the tears.]

In the case of laceration reported by Sitzenfrey,[1] the patient was a primipara, 25 years of age, with a very rigid perineum and narrow vagina. The pelvic inclination was normal, though the arch was somewhat narrow. The pelvic measurements were somewhat smaller than normal, but the child was correspondingly small, weighing but 2,500 gms. Progress of labor was rather slow, but the membranes remained intact until after the dilatation was completed. Immediately after rupture of the membranes, the pains became severe and tumultuous and the patient bore down with them. She was placed in the Sims' position to protect the perineum, and upon inspection of the same it was found there was a central rupture just above the anus 3 to 3½ cm. (1.2 to 1.4 in.) wide. An episiotomy was performed and the child was easily delivered, accompanied by the discharge of considerable blood and liquor amnii. The time that elapsed between the rupture of the membranes and the appearance of the head in the preanal slit was barely 10 minutes. The patient immediately collapsed and she was placed on the table for operation. The expulsion of the placenta was accompanied by the loss of but little blood. It was then found that the posterior vaginal wall was torn on both sides, especially deep on the left, up to the upper third. The pelvic floor was completely torn on the left. In spite of the extent of torn surface there was still but very little hemorrhage. The tears were all sutured, but the patient failed to revive and died 2½ hours later. [Cause? Ed.]

A Factor in Perineal Operations. Wm. H. Shipps[2] lays stress upon the importance of instructing the mother to avoid the forcible bearing down efforts just as the head is being delivered over the perineum. He states a great majority of such lacerations are due to the fact that the patient encouraged by her friends and medical attendant to bear down for a long period of time puts forth all her reserve energies at this time, and the perineum does not have time to dilate sufficiently to allow the head to pass.

(1) Zeitsch f. Geb. u. Gyn., Band. LVI, H. 2.
(2) Medical Record, Feb. 17, 1906.

He thinks the physician should instruct the patient that all bearing down efforts should cease when the head is being delivered, and that the fear of an operation after labor is sufficient to cause the patient to avoid the necessity of such a procedure as far as possible.

Immediate Diagnosis and Treatmeut of Lacerations of the Perineum. C. S. Bacon[1] disagrees with Hirst and Dickinson regarding the best time to repair the injuries of the pelvic floor, and contends that except in the exceptional cases where the mother's condition is such that the examination and operation should be deferred, all lacerations should be attended to immediately at the close of the labor. Both palpation and inspection under a good light are necessary to ascertain the extent of the injury. Ether is preferred as an anesthetic.

Bacon objects to the common method of tying the long ends of the silkworm-gut sutures in one knot because of its liability to collect the discharge, and further, because undue tension is apt to be made on certain sutures. He prefers to cut the ends short, and run the risk of some of them being slightly buried in the membrane or skin. [Tying the ends of the silk gut suture in a firm knot about 1¼ inches from the skin will prevent the free ends from sticking the patient; will allow the nurse to sponge the parts without catching up the sutures and facilitates finding the sutures when it comes time to remove them. If the patient is properly cared for by the nurse, discharges will not collect in the knot.—Ed.]

Central Rupture of Perineum. A. E. Dodson[1] records a very rare occurrence in the labor of a primipara, aged 21, who had a normal first stage with the head in the first position of the vertex. At the close of the second stage the perineum was seen to rupture in the center, and the fetus and placenta were expelled through the rent without tearing into the vagina or rectum. The lacerated wound was 5 inches long in the median line of the perineum. The anterior extremity of the rent was situated on the left side of the vagina about 2 inches anterior to the fourchette, while the posterior end was at the side of the rectum.

(1) Illinois Med. Jour., December, 1905.
(2) British Med. Jour., April 14, 1906.

Both the vaginal and anal orifices and the rectum were uninjured and intact.

Case of Dicephalus. The mother of the monster reported by W. K. West[1] passed through a difficult pregnancy, complicated by a thrombosis of the left femoral vein. The fetus presented by the breech with one leg lying in the vagina. A diagnosis was not made until the monster was partly delivered. Under full anesthesia the trunk was delivered as far as possible, the hand was passed up into the uterus and the condition investigated. A blunt-pointed bistoury was introduced and the left head, being lowest, was severed and no further difficulty was experienced in the delivery.

There were two heads, two necks, two arms and two legs; two distinct spinal columns and one sternum. The lungs were single; two hearts lay in one pericardium; two stomachs and two intestines as far as the ileum, terminating in one anus; one liver, two gall-bladders, two kidneys; one bladder and single male genitals. The monster conformed to the type of *dicephalus dibrachius dipus.*

A Case of Quadruplets. L. W. Roberts[2] reports the case of a patient with a family history of twins on her maternal side who gave birth to ten children in six pregnancies, as follows: Twins, triplets, a single child, twins and two single births, all of whom are living except the triplets, which were premature. At her last labor, which occurred at the eighth month, the first child, a boy, was born in an hour. The second child also presented by the head and was delivered with forceps. The third child was seized by the feet and delivered in five minutes, but was stillborn. The fourth, a girl, presented by the breech and was extracted in fifteen minutes. There were four separate and distinct placentæ and four separate "bags of membranes." The mother and her three children recovered.

Labor with Anomalies of the Amnion. According to v. Bardeleben,[3] the anomalies which are of practical importance to the obstetrician are hypoplasia, adherence to the fetus, and tearing during pregnancy. These three

(1) Journ. Amer. Med. Assn., July 15, 1905.
(2) The Australian Medical Gazette, June 20, 1905.
(3) Zeitsch f. Geb. u. Gyn., B. LIX, H. 2.

conditions are rarely observed separately, but on the other hand, usually occur in various combinations. Hypoplasia is more frequently encountered in combination with one or both of the other conditions. It results in an insufficient production of liquor amnii and imperfect dilatation of the cervix. The condition known as *"conglutinatio orificii externi,* he thinks, is a result of the relative overdistention of the amnion.

He reports two cases of this kind occurring in primiparæ aged 19 and 21 years respectively. The uterus felt *hard* and stretched, even during the interval between pains, so a suspicion of tetanus uteri was aroused. The peculiarity of the cases was the uniform rotundity of the uterus (the fundus reaching only 2 to 3 finger breadths above the umbilicus) and the relatively small abdominal circumference, in the one case being only 90 cm. It was difficult to reach the external os, though it was easily dilated. Rupture of the membranes was followed by the discharge of only a very small amount of liquor amnii, after which the head, which was still movable at the inlet, became engaged very easily and rapidly.

The relative overdistention of the amnion may be an important factor in favoring a tendency toward abnormal attitudes and positions of the fetus. The adhesions of the amnion with the fetus are the result of an inflammatory condition, and may cause various deformities.

Lacerations of the amnion are the result either of adhesions or a lack of amniotic fluid and activity of the fetus. v. Bardeleben reports a case in which the cord prolapsed at the end of the fifth month of pregnancy after the existence for three months of hydrorrhea. The fetus had escaped from the sac, but still kept on developing until it was expelled from the uterus through some unknown cause without any indication of pains. They could not be aroused even after delivery and a profuse postpartum hemorrhage resulted.

In another case, it was supposed for a while that a placenta previa existed and that the sudden cessation of the hemorrhage was due to compression by the head. The midwife in attendance had perforated the soft head during the examination, and a profuse hemorrhage occurred, but

soon ceased. The delivery was delayed on account of a restraining band of amnion around the head.

Of conglutinatio orificii uteri externi. v. Bardeleben[1] reports five cases. He does not approve of this term, in a general way, since it does not express the condition correctly in all cases. He suggests a classification according to causes and the term "Prevention of the dilatation of the external os" as a result of: (1) adherence of the lower pole of the ovum; (2) stricture resulting from a scar; (3) stenosis and rigidity of old primiparæ; (4) relative overdistention of the amniotic sac.

Fracture of Clavicle During Labor. Hanch[2] found upon examining the records of 2,531 labors in the Copenhagen clinic that fracture of the clavicle with head presentation occurred 16 times (.67 per cent); 8 occurred in primiparæ and 8 in multiparæ. The weight of the children varied between 2,950 and 5,150 gms. He concludes that many of these fractures are due to the traction made on the head, and where this was not done it was due to the passage of the shoulder behind the symphysis, forcing the shoulders together on the chest. Pressure upward on the perineum with the hand is also considered a factor. The fracture usually occurs between the outer and middle thirds and occurs with the use of but very little force, if this is directed in a certain way. The fractures are usually subperiosteal, not serious, and the prognosis is good. At the end of 10 days 13 of the fractures had united, one was not entirely solid, one was freely movable and the other had united with an upward displacement of one fragment.

Labor with an Enormously Hypertrophied Cervix. Haagn[3] reports a case occurring in a primipara of 34 in which the cervix was considerably hypertrophied and prolapsed. The condition was first noted when the patient was 13 years old. While at rest or sitting down the prolapse did not occur. It replaced itself for a long time and eventually had to be replaced by the patient herself, especially during pregnancy. She was married nine months before delivery. Cohabitation was performed without dif-

(1) Arch. f. Gyn., B. 76, H. 1.
(2) Zentralb. f. Gyn., No. 33, 1905.
(3) Zentralb. f. Gyn., No. 35, 1905.

ficulty. Upon admission it was found that the anterior and posterior walls of the vagina prolapsed with the cervix which was 4 inches long and 2 thick. Labor was somewhat slow and the external os dilated with difficulty, so after effacement was complete the anterior and posterior lips were cut with the scissors and the child delivered with forceps. The temperature which was 102.2° F. just before delivery dropped to normal one hour after labor, the uterus having been irrigated with a 2 per cent lysol solution.

Labor Obstructed by Cervico-Vaginal Fistula. Couvelaire[1] reports a peculiar case of obstruction to labor. At the age of 26 the patient produced an abortion at the third month. Puerperium was normal.

At 31 she again became pregnant, which continued normally. She came in labor at the end of 8½ months. The membranes ruptured 12 hours before the first pain. The child was living and presented by the vertex, L. O. A. The cervix was displaced to the right and in front. It was not completely effaced and was dilated about the size of a dime. On the posterior lip and to the left of the median line there was a fissure, with very thin edges, about the size of a lentil. The fetal head was being forced against this part of the uterus, which was very thin and presented no sign of cicatricial tissue. Three and one-half hours after admission the fistulous opening was the size of a silver dollar, while the cervix was pushed to the right and above. The fetal head was being pushed through the fistulous opening which showed signs of rupturing, so the bridge of tissue between it and the cervical opening was divided with the scissors. There was but little hemorrhage and a living child was delivered about 1½ hours later. Examination of the fistula showed the tear had extended to the vaginal cul-de-sac but not beyond it. Puerperium was normal. The fistula undoubtedly was produced at the time of the abortion.

Ventrofixation and Labor in its various aspects and methods is discussed by Seegert.[2] He maintains the original method first used by Ohlshausen is the best. It consists rather in a lateral than ventral fixation, since the ligature is carried through the uterus at the point of

(1) Ann. de Gyn. et d'Obst., April, 1905.
(2) Zeitsch f. Geb. u. Gyn., Band. 55.

attachment of the round ligaments (and if pregnancy is no longer anticipated the tubes at their junction with the uterus are also included), leaving the fundus practically free to develop during pregnancy. He shows that numerous other methods have been erroneously called the Ohlshausen method.

Seegert collected 40 cases from the literature and analyzes the same. The least disturbance during labor was observed in the cases in which the Ohlshausen method had been used. Ileus was observed but four times, and in cases in which the fundus was fixed.

Sudden Death During Termination of Pregnancy. E. P. Davis[1] reports that from a study of 25 cases there are four main classes:

1. Sudden death may follow abortion, labor or operation from undemonstrable causes, post-mortem revealing no explanation whatever.

2. Death may follow from rapid formation of a pulmonary embolus. This accident occurs under a variety of circumstances, and no operation or method of procedure can be proved to be causative. In more than half the cases the labor was normal. It has occurred before delivery, during labor, during forceps, version and other operations, during the Credé expression of the placenta, and even while the patient was sleeping after labor. As a predisposing cause a number of patients were found to be suffering during pregnancy from some infection of the bronchial tubes, others from dyspnea. The increase of fibrin in the blood may also predispose to embolism. Of 30 cases occurring in 18,800 labors, 22 or 73⅓ per cent died.

3. Death may occur immediately or within a month from primary thrombosis and subsequent embolism. Richter collected 78 cases out of 16,000 labors of this character. The causes of this accident are pre-existing infection, mechanical violence, altered condition of blood serum and lesions of the vessel walls. Total cases usually terminate by the formation of a pulmonary embolism, preceded or succeeded by a heart clot. The theory that air embolism is a cause of death is denied, indisputable

(1) Surgery, Gynecology and Obstetrics, July, 1905.

evidence by Senn and Hare leaving no further doubt on the subject.

4. Among the rare causes is the sudden nervous reflex from vaginal manipulations, the patient dying immediately upon a vaginal examination from no assignable cause. Other causes are those causing sudden death from factors independent of pregnancy.

The conclusion is drawn that sudden death from thrombosis and embolism is most frequent in cases having foci of infection, or disease of the heart and blood vessels.

[The question of air embolism has not yet been definitely settled. Animal experiments tend to prove that air may be injected in large amounts without death. Rupture of the uterus may be mentioned as a cause of sudden death in labor. Cases of collapse and death from nervous reflex from the genitalia do occur but are excessively rare. The writer has seen two such cases. Morphin is indicated here. Ed.]

Twin Pregnancy with Anteposition of the Fetuses. Twins may lie in three different positions to each other, either side by side, on a level, or with one above the other, or in front of each other. In the last case there may be but one area in which the heart tones can be heard, and often only two large parts can be palpated. Legueux[1] collected four cases in which the diagnosis was made before labor. Sometimes the anterior and sometimes the posterior fetus is engaged in the pelvic inlet. In his cases the posterior fetus presented first. The diagnosis then is comparatively easy, since it is possible to locate three fetal poles, two abdominally and one vaginally. The same findings should be made when the anterior fetus lies transversely. The diagnosis is difficult when the head of the anterior child is engaged. The shape of the abdomen is characteristic, since it projects more forward. The distention of the uterus may be so great that palpation is rendered difficult.

Interlocked Twins. In 1897, Heilgendorff[2] collected 29 cases of *twin pregnancy in which interlocking occurred.* Since that time 3 cases have been reported and a report

(1) L'Obstetrique, March, 1905.
(2) Deutsche med. Woch., No. 10, 1905.

of the fourth is now furnished by Frankenstein. The patient was a II-para. The membranes had ruptured three days previously and labor had been in progress 7½ hours when patient was seen. The midwife had reported a transverse presentation, but in the interval had discovered a foot and brought it down but was unable to deliver the head in spite of strong contractions. The head of the partly delivered and dead fetus was found in the left anterior position and the head of the second twin was in the pelvis in a right occipito-posterior position. A combined delivery being out of the question and the contraction ring advancing toward the umbilicus, the head of the first twin was decapitated with Smellie scissors, because attempts at pushing up the other head might have resulted in rupture of the uterus. The stump of the neck was grasped with a long forceps as a prophylactic measure against injury to the soft parts. The second twin was then easily delivered with forceps and the head of the other was easily engaged and delivered. On account of complete atony and hemorrhage the uterus was tamponed. The child lived and the mother recovered.

Fetal Looping of the Cord. H. C. Jones[1] reports an interesting case. The pregnancy was normal till the sixth month, when fetal motions suddenly ceased and were felt no more. At term, labor occurred and a 5-pound fetus was spontaneously delivered, completely enveloped in the membranes. The cord was looped four times around the left leg and once around the right. These loops were drawn so tightly that the muscular tissue had atrophied and only the bone and integument remained.

Jones concludes that this complicated condition was due to the instinctive efforts of the fetus to free itself from the entanglement and that nature has instilled into the unborn fetus an impulse to struggle to maintain its existence, without which impulse probably more children would be necessarily lost.

Short Cord. G. Vetrano[2] reports two cases. The first patient had passed through two normal pregnancies, but complained during the last months of her third pregnancy

(1) Journ. Am. Med. Assn., July 22, 1905.
(2) Il Policlinico. Surg., Gynec. and Obstet., March, 1906.

of pains in the right renal region and in the left half of the uterus.

During labor complete uterin inertia lasted for ten hours, after which a dead fetus was extracted with forceps. The placenta immediately followed with great hemorrhage. The cord measured 12 inches. The second patient complained of pain constantly at the same point of the uterus from the fifth month on during her sixth pregnancy.

Labor set in with severe hemorrhage. The dead fetus presented by the breech with its back to the mother's left side. The mother nearly died from hemorrhage. The cord measured 12 inches. Vetrano concludes that with a history of uterin pains in a constant position, posterior positions of the fetus and hemorrhage during labor, the attendant should suspect the probability of a short cord.

Uterus Duplex Separatus and Vagina Septa. Pollak[1] reports a case in a primipara at term. The pelvic measurements were large: int. sp., 29; int. cr., 31.5; bitroch., 34; Baudelocque, 21; conj., 11.5. Menstrual history shows marked irregularity. Labor was uneventful excepting that the presentation was a double breech and manual aid was finally necessary on account of threatened asphyxia, due to pressure on the cord and its being coiled tightly twice around the neck. Four days after delivery a decidual cast of the right uterus was expelled.

The vagina was divided by a broad septum which was pushed to the right side and remained intact during the delivery. There were two distinct cervices and likewise uterin bodies. Pfannenstiel's sign—the vertical course of the round ligament in front of the pregnant left uterus—was present.

Examination per rectum, twenty days post partum, revealed a distinct space, about ½ inch in width, between the cervices, which is of great importance in making the diagnosis. Pollak contributes 9 additional cases from the literature, including his own, to the 12 already gathered by Pfannenstiel.

The diagnosis is sometimes difficult and is rendered easier the more of the upper part of the uterus can be palpated, but it is absolutely necessary that the cervices

(1) Arch. f. Gyn., B. 75, H. 2.

be separated and merely connected by the so-called "intercervical ligaments."

Full Bladder as Cause of Transverse Presentation. A transverse presentation or cross birth in a primipara very readily suggests a contracted pelvis among other conditions as the cause, but in the case reported by Kermauner,[1] though the pelvis was slightly generally contracted (26, 27.5, 28, 19, cr., 10) it could hardly be considered of sufficient import in producing the oblique position of the fetus. During pregnancy the presentation was normal, but a few hours after labor had begun the abnormal position was noted. It was also found the uterus was in a position of extreme dextroversion, and torsion. Internal examination revealed a large, tense, cystic tumor which filled the pelvic inlet. The cervix was directed to the left and posteriorly and admitted but two fingers. The bladder was then catheterized and 900 c.c. of urine removed, after which the head again entered the pelvis. Later in the day the oblique position was again observed. The patient was urged to urinate and finally succeeded in passing 300 c.c. of urine. She was then placed on the left side and labor went on in usual manner.

It is of interest to note that the bladder in this case was a pelvic organ during labor, whereas it should be out of the pelvis.

The second time occurred after labor. Five hundred cubic centimeters of urine were passed at one time and still the bladder could not be palpated above the pubis before it was emptied. It is assumed, therefore, that its relation to the cervix must have been abnormal and that it was connected with the genital tract in an unusual manner.

[The importance of emptying the bladder is emphasized by these cases. During labor the catheter should be used every 4 hours unless the patient urinates spontaneously. Delay in delivery, often necessitating forceps, has resulted from neglect of this precaution. Post partum hemorrhage and retention of the placenta are some of the common results of a full bladder.—Ed.]

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(1) Zentralblatt f. Gyn., No. 34, 1905.

Missed Labor. Herz[1] reports a case in a II-para. Her first labor was normal, but from the fourth day of the puerperium she was bedridden for 4 months on account of temperature, pains, and a discharge. During the second pregnancy for a period of 8½ months her condition became very bad. She suffered from various pains, vomiting, loss of appetite and a profuse discharge. At the end of this period, pains began to be regular and she was apparently in labor. No liquor amnii escaped and the pains gradually ceased, after which she felt much better and again went about her work without much discomfort. The fetal movements were never again felt from the time that labor apparently began. Just 7 months later she was suddenly seized with severe pains in the abdomen. Dilatation not proceeding in proportion to the character of the pains, a colpeurynter was first introduced into the vagina and later a smaller one in the uterus until four fingers' dilatation was reached, after which the fetus was readily extracted by the breech. It was mummified and weighed about 3½ pounds. The placenta was removed manually. There was no loss of blood nor liquor amnii. After the uterus was empty it still extended above the umbilicus, so ergotin was prescribed. Involution was very slow and unsatisfactory.

Herz attributes the cessation of labor and the subinvolution of the uterus to adhesion of the uterus to the peripheral tissues, the result of a pelveo-peritonitic exudate resulting from the septicemia that she incurred at the first labor. The adhesions prevented proper contractions of the uterus, hence labor came to a standstill.

Vagitus Uterinus. Fraser[2] reports a case observed in a brow presentation. The woman had been in labor a week under the care of a midwife. The membranes were ruptured and the fetal heart tones were 120. The os was a little larger than a silver dollar and unyielding. Attempts to flex the head were unsuccessful, so the patient was placed in the genu-pectoral position, and immediately a series of cries was heard. The mother as well as those across the room heard them distinctly and recognized their source. They were repeated at intervals until the time of operation, an hour and a half later. Version was per-

(1) Wien. med. Woch., No. 6, 1905.
(2) Glasgow Med. Journ., March, 1905.

formed and a cyanotic child was delivered, which recovered.

Emphysema During Labor. F. H. Sprague[1] reports a case in a healthy primipara of 24. Labor was somewhat prolonged owing to the scanty liquor amnii; the presentation was normal. Chloroform was administered throughout the second stage owing to the violence of the pains. As the head was being delivered over the perineum, it was noticed the right side of the mother's neck was swollen. On examination, after labor was completed, the swollen area was found to extend over the whole front of the chest on the right side down as far as the fourth rib. The supraclavicular fossæ were distended and also the anterior and posterior triangles of the neck. The right side of the face was swollen and the conjunctiva was injected. The voice was nearly lost, the patient being able to speak only in a husky whisper. Difficulty in breathing and swallowing were marked for the first twenty-four hours. Severe headache and rise of temperature occurred during the first two days, after which all the symptoms subsided and recovery was rapid and complete. The treatment was expectant, rest in bed and laxatives being employed.

Precipitate Labor. Weindler[2] reports a case of precipitate labor occurring in a II-para 23 years old. She was 5 feet 9½ inches tall, strongly built, and her pelvic measurements were 25, 28, 32, 19½, and conj. diag., 13½. The pelvic inclination was 41°. The first labor was very rapid. With the present one, she had no intimation that labor was in progress other than the inclination to defecate oftener than usual, and in fact the bowels were acting loosely. It was while she was in the toilet room and standing with the body slightly inclined forward that the child was suddenly precipitated to the floor. The cord was torn off at the umbilicus, but the child escaped injury. The mother fainted, but not from the loss of blood which was very small. There was no laceration and the placenta was delivered spontaneously; puerperium was normal. The child was 22½ inches long and weighed 10 pounds. The duration of pregnancy was 322 days.

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(1) Lancet, Oct. 28, 1905.
(2) Zentralb. f. Gyn., No. 37, 1905.

Persistent Mento Posterior Positions. C. B. Reed[1] disputes the dictum of Cazeaux that it is impossible for the face to reach the pelvic floor unless the chin has rotated to a point anterior to the transverse diameter without the chest also descending into the pelvis. The distance from the chin to the sternum as measured in 50 mature babies averaged 8.75 cm., the maximum being 11 cm. and the minimum 6 cm. The stretching of the neck as affected by the mechanism of labor is greater than would be obtained by measurement externally, and since the lateral walls of the pelvis do not average over 9 cm. in height, Cazeaux' argument is untenable. In true mento posterior positions the thorax is enabled to enter the large inlet so the head may descend to the outlet and, therefore, from an anatomic standpoint, at least, the head can engage.

Reed collects a series of 75 cases of impacted mento-posterior positions and found that 17 or 22.6 per cent terminated with the chin being delivered over the perineum. Of these cases there was a maternal mortality of 11.6 per cent and a fetal death rate of 40.6 per cent. It is pointed out that the dread of these cases is due rather to their rarity than to the mortality, as this is not so high as the best modern figures of eclampsia or placenta previa.

As regards treatment, he states the failure of the chin to rotate anteriorly is a definite indication to intervene. Manual conversion into an occiput presentation is to be tried if the conditions are present; if not, version is the operation of election. If the head is engaged in the pelvis, a cautious trial with the forceps may be made, but the fetal mortality is high (50 per cent).

[It must be remembered that the chin, in mento-posterior cases, has not alone the 9.12 cm. of the bony pelvis to traverse but also 10 to 14 cm. of dilated soft parts before it can be delivered in its posterior position. While a few cases, a small fetus, large pelvis, strong pains being present, have terminated spontaneously with the chin over the perineum this is the great exception. Those face cases with chin posterior that are terminated by craniotomy are seldom reported. One that terminated spontaneously would

(1) Medicine, June, 1905.

be rushed into print, thus accounting for the 22.6 per cent of Reed's table. Every accoucheur of experience in mento-posterior cases dreads them, and few obstetric complications are more fatal to the child, or present as many difficulties for the accoucheur.—Ed.]

Hematoma Vulvæ et Vaginæ. According to Hill,[1] this occurs about once in 2,500 cases. In the majority after labor, and in about 10 per cent it is observed before the second stage begins, being about equally divided between pregnancy and the first stage. The hematoma is favored by the great vascularity of the parts and by varices. It may be the result of long walks and the straining of vomiting during *pregnancy,* or the manual or instrumental intervention and the straining of the patient during *labor.*

It has been observed more frequently in twin cases, the predisposing factor being the delivery of the first, and the expulsion of the second the direct cause.

The principal symptoms are *pain, sudden appearance of a tumor,* and *hemorrhage.* Oftentimes there is vesical and rectal tenesmus, and if the tumor is large the vagina may be occluded. The most favorable termination is by resolution, though infection may easily occur. The mortality is about 12 per cent.

The treatment should be expectant with the application of ice, antiseptics and astringents. When the tumor is very large and there is danger of rupture, it should be incised, the clots removed, irrigated and packed.

Hill reports a case occurring in a II-para. The labor was precipitate, and the baby weighed 9 pounds. There was nothing unusual noted at the time, but 6 hours later the doctor was recalled and found a hematoma of the vulva and vagina larger than a fetal head. It had appeared suddenly, preceded by a sharp pain. The patient was in collapse, hence treatment was directed toward same. Ice was applied locally and on the third day, though already somewhat smaller, it showed signs of necrosis near the anus, and an incision was made at the margin of the mucosa and skin of the labium. One and one-half pints of clots were removed, after which the cavity was irrigated

(1) New York-Philadelphia Med. Journ., April 22, 1905.

and then packed with gauze. This was repeated each day; perfect recovery.

Hematoma of the vulva and vagina occurs in two forms —*infrafascial,* in which the loose connective tissue of the large labium is more or less quickly involved, from which the process extends to the perineum and the pararectal tissues; and the *suprafascial,* in which the hematoma lies above the pelvic fascia and extends into the pelvic connective tissue without any special limitation; sometimes may even extend retroperitoneal. A mixed form may also exist. The suprafascial is more rare and Walther[1] reports a case occurring in his practice in a primipara. The midwife had diagnosed a breech presentation which was indeed a brow presentation (child had a prominent thyroid about the size of a hen's egg). Labor was finally terminated as a face presentation with the forceps without a perineal laceration. The third stage was normal, and the placenta was delivered 20 minutes later without any complication. Less than an hour after delivery the patient complained of a peculiar pressure toward the anus. This increased and signs of anemia manifested themselves. Upon attempting to irrigate the vagina in order to remove a possible accumulation of clots, it was found impossible to introduce the douche point. It was then found that a large suprafascial hematoma, about the size of two fists, had formed. It was treated expectantly at first by means of cold compresses, etc., but finally had to be opened and packed with iodoform gauze, which was removed at the end of 15 hours. The vagina was irrigated *t. i. d.* with a solution of peroxid to prevent any accumulation of blood or a stagnation of the lochia. Patient had fully recovered by the 16th day. The etiology remains obscure.

[The Editor has at the present writing under his care a typical case of hematoma vulvæ et vaginæ. It is of the mixed variety with the bulk of the extravasation below the deep pelvic fascia. The upper limit of the clot at operation was found to be at the level of the internal os in the broad ligament. The patient had albuminuria, and toxemic gingivitis (scorbutus?) before the induced labor (7 mos.). The child presented by the breech and the ex-

(1) Zentralb. f. Gyn., No. 29, 1905.

traction was accomplished easily without laceration. The hematoma began within an hour and quickly filled the left half of the pelvis encircling the rectum. As it was growing, the patient being very anemic and necrosis of the rectum threatening, a long incision was made in the mass, the clots (about a quart) removed and the large cavity packed with gauze. The patient is still ill, but there is no further hemorrhage.]

Pudendal Hernia Following Confinement. W. A. Dickson[1] records a rare case of pudendal hernia following labor. The patient had been delivered of her 9th child and passed through an uneventful puerperium except for a slight pain in the left iliac region. Later the left labium was found to be swollen and painful immediately in front of the fourchette. This felt cystic and tense, but could be reduced by considerable pressure. A distinct impulse was felt upon coughing. The neck of the sac, about the size of the little finger, ran upward between the vaginal wall and ischium and was lost behind the cervix uteri. This form of pudendal hernia corresponds to that described by Astley Cooper, descending between the rectum and vagina, and making its way between the fibers of the levator ani.

It is supposed that by reason of the frequent stretching and relaxation of the pelvic floor by the repeated, though normal, parturitions, the bowel had been forced through a weakened portion of the pelvic floor. The patient refused operative procedures, but the hernia disappeared completely three months later.

Inversion of the Uterus. L. V. Friedman[2] details two cases of inversion of the uterus following labor, the first five days post partum, and the second with the placental expulsion. Both were irreducible by taxis, according to the method of T. G. Thomas, and after abdominal section reduction was successfully carried out. If possible the contracting ring is to be dilated by the fingers, otherwise the Reynolds' dilator is preferred. Moderate hand pressure only is used and care is taken not to injure the tubes and ovaries. By the hand of an assistant in the vagina that portion of the uterus last inverted is pushed beyond the ring

(1) Edinburgh Med. Jour., April, 1906.
(2) Journ. Am. Med. Assn., Dec. 23, 1905.

and then caught and held by volsella forceps. The process of dilating, reinverting and holding with the forceps is continued until the process is completed. No attempt at traction with the volsella is permitted, as it easily tears out. After complete reduction, which should not take over 45 minutes, retraction is often rapid and all danger of relapse is past. If necessary an intrauterin packing may be inserted.

Diagnosis of Retained Placenta Succenturiata. This is not always easy and may be impossible, says Labhardt,[1] except by intrauterin palpation. In the case reported the placenta was delivered spontaneously and measured $6\frac{1}{2}$x$7\frac{1}{4}$ in. The membranes were complete. Two inches from the main placenta there was another in the membranes, $3\frac{1}{2}$x5 in. and $1\frac{1}{2}$ in. thick. It was very compact, whitish, completely infarcted, and calcified in spots. Absolutely no communication of the blood vessels could be demonstrated.

Operative Obstetrics.

Premature Labor with Contracted Pelves. Scheffczyk[2] analyzes 164 cases of induced premature labor, on account of contracted pelves, occurring in the Breslau clinic. The C. D. varied between 3 1-5 and 4 1-5 in. One hundred and sixty-six babies were born with a mortality of 22 per cent. That the induction of premature labor was not harmful for the babies was proven by the fact that fewer died during the first year under normal conditions (such as only the legitimate enjoy) than the average mortality for the first year (17 per cent). An examination at a later period did not demonstrate that the procedure had in any way injured their chances of living when compared with others born at term. The maternal mortality of 0.6 per cent is presented as further proof that the method used by Scheffczyk is to be recommended. It is known as the *"glycerin bag method."* The delivery as a rule was spontaneous and with cephalic presentation. Many of the women have gone through the procedure a number of times with equally good results. The bags used are ordinary

(1) Zentralb. f. Gyn., No. 4, 1906.
(2) Arch. f. Gyn., LXXV, Heft. 3.

sheep's bladders. After the fat has been removed they are inflated, dried and sterilized by immersion in an alcoholic solution of bichlorid for four weeks. The bag is tied upon an elastic catheter, which has been boiled in an ammonium sulphate solution, and after a preliminary douching of the vagina with lysol is introduced into the uterus through a speculum. A tube is attached to the bladder and 90 c.c. of glycerin are then injected by means of a syringe. It is not necessary to dilate the cervix, since the catheter is passed with great ease and little discomfort. The bladder now acts as a foreign body and in addition the pains are also stimulated by the glycerin. The engagement of the head is not prevented as with a large colpeurynter. If there has been no change after three hours the glycerin is drawn off and with it the liquor amnii which has entered the bag. The bag is again filled, and if necessary this may be done from 5 to 8 times, or a new bag introduced without any appreciable injury to the patient from absorption of the glycerin. The only contraindication to this method is nephritis.

Fetal Mortality in Contracted Pelvis. The latest statistics show a variation between 8 and 32 per cent. Though the number of statistics furnished is quite sufficient to arrive at a more definite conclusion, the methods used have been quite at variance with each other, hence Baisch[1] urges the necessity of more uniform operation and classification. He suggests:

(1) That each hospital or clinic furnish the total number of contracted pelves occurring therein, and the frequency of each operative procedure.

(2) That only internal measurements of the pelvis be considered.

(3) That the pelves be classified according to the degree of contraction.

(4) Omission of all cases in which the fetus weighed less than 2,500 gms. and the classification of the labors according to the weight of the child.

(5) Classification into primiparæ and multiparæ.

(6) Cause of death of the fetus.

The statistics will be simplified if the flat and generally

(1) Zentralblatt f. Gyn., No. 27, 1905.

contracted pelves are not separated. The old classification into three groups, in one of which was placed the generally contracted pelvis with the provision that the conjugata vera should measure 1-5 in. more is of no value in determining the prognosis, since a study of 2,500 cases of contracted pelves has shown that the labors were more often spontaneous in the generally contracted pelvis than in the flat with the same conjugata diagonalis.

The treatment is either expectant or active. A comparison of the statistics furnished by the larger European clinics shows that the fetal mortality was in direct proportion to the frequency of operative intervention. With active treatment the fetal mortality was from 2 to 3 times higher than by the expectant method. The expectant plan is especially resorted to in the clinics of Zweifel (78 per cent) and Döderlein (80 per cent). The maternal mortality is reduced also by this method, being in the above mentioned clinics only 0.1 per cent.

Methods of Inducing Labor. Hirst[1] gives a review of 217 cases of induced labor and comes to the conclusion that the bougie method is at the same time the quickest, most satisfactory, least dangerous, and most agreeable. He induced labor with the bougie alone in 174 cases. In 8.1 per cent the child was born within 36 hours. He used the bags alone in 23 cases and delivery was accomplished within 36 hours in 83 per cent. In 11 the bougie was followed by the bag. In 7 by Bossi's dilator; in 2 by vaginal hysterotomy (vaginal Cesarean).

Hirst introduces 2 bougies and inserts a small tampon of iodoform gauze in the vagina. If after 24 hours there are no labor pains, the patient is placed on an operating table and the cervix is dilated to 2½ or 2 4-5 in. with the Bossi. The forceps is then applied and the child delivered. the whole operation not requiring more than 35 minutes. If the Bossi should prove impracticable the colpeurynter may be introduced or vaginal section may be done.

Artificial Dilatation of the Cervix. R. C. Norris[2] considers that cases calling for the induction of premature labor within 12 hours are exceedingly rare. The usual methods by the bougie, hydrostatic bags and mechanical

(1) American Medicine, May 6, 1905.
(2) American Medicine, May 20, 1905.

dilatation take from 29 to 34 hours for the completion of the delivery, though in exceptionable cases much more time is required owing to the tardiness with which the uterus responds to stimuli. In order to shorten this time and to provide for a certain and safe method, a combination of these three methods is used at one sitting. The cervix is first instrumentally or digitally dilated to the size of the index finger, and a two-bladed steel dilator, which is also used as a bag introducer is passed into the cervix, taking care not to injure the membranes. The entire cervix is dilated from 1 3-5 to 2 in. so as to admit the bag. The degree of stretching is ascertained by the index finger which acts as a third blade in dilating the os. A hollow bougie (Dalamatte, size No. 23) containing a stylet having a curve of a prostatic catheter is then passed between the anterior uterine wall and the membranes, the stylet merely giving the necessary direction to the catheter. After the bougie has been inserted about 10 in. a large bag of the Voorhees type having a capacity of 600 c.c. is introduced by the dilator and filled with 480 c.c. of sterile water by a metal syringe. This bag, incompletely filled, adapts itself easily to the lower uterine segment and does not tend to displace the presenting part. The vagina is then packed with gauze. The entire procedure lasts about 20 minutes, and is frequently done without anesthesia. If dilatation is very slow, traction of under 3 pounds is allowed, but only during the pains.

Norris finds that in 35 cases where the bougie and bags alone were used the labor was terminated in from 29 to 34 hours, whereas, when the mechanical dilatation was added to the treatment, the average duration of labor in 18 cases terminated by forceps or version was 7 1-5 hours; in cases of spontaneous delivery, 16½ hours.

For the relatively rare cases in pregnancy and labor requiring accouchement forcè, the treatment depends upon the condition of the cervix, the state of the mother and the determination to avoid a too rapid dilatation of the os.

Dührssen's vaginal section is a most valuable operation in the hands of an expert obstetric surgeon and should be generally preferred to the Bossi instrument. This is the best method ever offered in the treatment of the gravest forms of placenta previa and of accidental hemorrhage.

According to Leopold[1] (during pregnancy) the best methods are those which are rapid and not especially dangerous.

A. *During the first half of pregnancy* the following are the most serviceable: Tamponade of the cervix and vagina, tents, and the metallic or hard rubber dilators. They are acceptable because: (1) They may be sterilized, (2) they are effective (check hemorrhage and stimulate pains), (3) they produce no laceration of considerable degree. The lacerations may be avoided by following certain precepts such as: (1) The tents must dilate the internal and external os equally; (2) they must not be greater in circumference than the lumen of the cervix in order to avoid difficulty during removal; (3) forcible dilatation of the internal os with the metallic dilators must be avoided. If a tampon is resorted to, the vagina, the fornices, and the cervix must be tightly packed. The use of rubber bags to dilate the cervix is unnecessary and at times dangerous.

The following procedure is therefore recommended:

(a) The use of tents is most satisfactory if the pregnancy is to be terminated with the uterus completely intact. They are used in the following way: One is inserted on the first day and two or more on the next or following days, depending on the degree of dilatation and succulence. The ovum is then usually discharged with the tents or else may be readily removed. Of course, preparations for the treatment of hemorrhage will have also been made.

(b) If the abortion is in progress and it is very apparent that it is inevitable, and the os is still closed, the best treatment is tamponade of the vagina and vaginal fornices. The tampon is to be removed at the end of 24 hours, after which time the ovum is already discharged or may be readily removed. If not, then treatment under (a) is to be followed.

(c) If the cervix is partly dilated and there is constant hemorrhage, treatment should be rather conservative until the os is sufficiently dilated, which should be accomplished with tents.

(d) In cases of severe hemorrhage and insufficient dilatation, rapid dilatation with metallic dilators such as He-

(1) Transactions of the German Gynecological Society, Kiel, 1906.

gar's, tamponade of the cervix to the internal os, or the use of the Bossi dilator (turning to No. 3) is indicated.

B. *In the second half of pregnancy.* The indications for intervention are: (1) Contracted pelvis or severe illness of the mother; (2) eclampsia; (3) placenta previa. The following methods are applicable:

1. Tamponade of the cervix with iodoform gauze. The results are good, though the action is rather irregular and the labor is sometimes somewhat extended. Occasionally it might be necessary to try method No. 4.

2. Rupture of the membranes. Results are good, effectiveness very variable, and the labor is often rather long. Average length is 61 hours.

3. Introduction of bougies. Easily performed, though length of method varies. In $\frac{1}{3}$ of the cases it takes longer than with the other methods (30-150 hours).

4. Metreurysis. Average length of labor is 17-20 hours. Rapid dilatation of the cervix is—especially sometimes—very easily secured ($\frac{1}{2}$-2 hours). Good results in placenta previa. But it has the following disadvantages: 1. It is not applicable if the cervix is closed. 2. The membranes may become detached and the presenting part may be displaced, consequently spontaneous deliveries with cephalic presentation are rarer and the chances for the fetus are lessened. 3. Increase of morbidity and occasionally severe lacerations.

The above methods are all capable of improvement; nevertheless, metreurysis is the best method in the hospital or clinic; in private practice it is not so readily carried out.

Very rapid dilatation of the cervix may be acquired: (1) By the dull or blunt method, with the fingers or metallic instruments (Bossi); (2) by the bloody method: deep cervical incisions or vaginal Cesarean section.

Artificial dilatation of the cervix during labor under the condition that the method must be as rapid as possible but at the same time a sparing one is performed (1) by the blunt methods:

(a) Dilatation with the fingers. Not certain and dangerous. Not to be recommended.

(c) The use of the Bossi dilator. The following rules must be observed:

1. The patient to be in the lithotomy position across the bed or on the table. Introduction of the instrument between pains under the guidance of the second and third fingers of the left hand. Depression of the handle toward the perineum. The presenting part, if it interferes, is to be pushed out of the way.

2. Dilatation is to be begun immediately after introduction of the instrument until the cervix is stretched moderately. Gradual dilatation in every second or third interval between pains up to 3 3-5 in.

3. This diameter is reached in 30 minutes and the labor may now be terminated.

4. To remove the instrument it must be unscrewed to No. 1 and rotated out upon the two fingers of the left hand.

5. It is better to deliver the fetus right after dilatation is sufficient.

Leopold recommends the use of the instrument only when the indication is positive. It has proved very valuable with proper application and good technic. Especially so in cases of eclampsia (20 per cent mortality), also when there is high temperature during labor, severe cramps of the uterus during pregnancy and labor, advanced phthisis at the end of pregnancy, cessation of labor on account of contracted pelvis, possible compression of the cord and threatened danger to the child, premature separation of the normally situated placenta, and to induce premature labor. It is not applicable in placenta previa.

The use of forceps after forcible dilatation furnishes the best results for the mother and child. Version and extraction endanger the fetus and also the mother through extension of tears. A portion of these lacerations has been unjustly attributed to the Bossi instrument.

The greatest objections against this method have been raised on account of the primary lacerations which may extend into the fornices or the parametrium. Regardless of the fact that severe lacerations may follow any obstetric operation, it is important to consider which modification of the instrument may be used. Any modification that has no pelvic curve is incorrect. The branches easily slip out and produce tears. Severe lacerations may be produced in primiparæ with large and callous cervices.

The contraindications are placenta previa and an indurated and scarred cervix the result of former tears.

Many lacerations may be avoided by the correct use of the Bossi instrument. Those that are produced are to be treated the same as others. The cutting methods include the deep cervical incisions and vaginal Cesarean section. They are to be recommended in hospital practice and occasionally in private practice, but not to the general practitioner. The Bossi method would be safer in his hands.

According to Bumm[1] the methods of dilating the cervix are: (1) Slow dilatation by means of tamponade, metreurysis, etc.; (2) quicker dilation with dilators of bougie form and with spreading branches (Schultze, Bossi); (3) incisions in the cervix and uterus.

The first method may be utilized without danger if the cervix is effaced and the os readily admits two figures. Difficulties arise when the cervix is only partly effaced and swollen and tumid. Spontaneous lacerations extend into the parametrium and severe injuries of the bladder have followed the incisions.

The vaginal Cesarean section with anterior and posterior splitting of the uterus is too complicated and bloody as a rule. The anterior incision suffices to deliver fetuses at term. Bumm recommends the following procedure:

Exposure of the cervix with a speculum and grasping it with two volsellæ which are deeply applied in the corners. Median incision of the anterior vaginal wall, two finger breadths from the orifice of the urethra to the external os. The bladder is to be pushed off from the uterin wall with gauze. The uterus is incised with scissors at this point, the cut edges are grasped at the upper end with volsellæ, drawn forward and the incisions extended. After the bladder has been completely separated the peritoneum of the vesico-uterin space is also pushed back. In premature cases the incision need not extend much over the internal os; in cases at term the incision must be 4-4½ in. long. An extension of the incision has not been observed even with large babies (heaviest 3,950 gms. or 8.7 pounds). If the incision is large enough the instruments are all to be removed and the uterus emptied. Version and extraction is usually indicated. Forceps were seldom used and with more difficulty than version. Atonic hemorrhage after de-

(1) Wiener med. Woch., No. 24, 1906.

livery is not rare when there is an absence of pains. Large doses of ergotin prior to operation are valuable. If the uterus shows no signs of pains, the tampon is indicated. The wound may then be closed with interrupted catgut sutures. The anterior vaginal wall is closed with a running suture. The tampon may now usually be removed. If the operation is performed with the cervix completely closed a glass drain must be introduced to prevent stagnation of the lochia. It is to be removed after a few days.

A mortality of 23 per cent was observed in 52 cases. Eclampsia or its consequences was the cause of death 5 times; volvulus once; phthisis twice; previous sepsis 3 times; pyelonephritis once, and once with spinal adrenalin-cocain anesthesia. The dangers are not great and if the patient is not already infected, primary union may be expected. The hemorrhage is not severe if the incision is made in the median line.

The value of the operation according to Bumm lies in the fact that the uterus may be quickly opened and emptied at any time in an exact surgical manner. He considers the Bossi method too dangerous.

In the cases operated by Bumm, eclampsia was the indication in one-half the cases. Nephritis of pregnancy, 4 times, severe heart lesion 3 times, advanced phthisis 5 times, and placenta previa 4 times. In placenta previa, the operation furnishes the best chances of securing a living child. The other indications were induction of premature labor with contracted pelvis twice, carcinoma twice (not to be recommended since it is only palliative, abdominal route better), sepsis after criminal abortion twice, and volvulus, chorea, stenosis of cervix and prolapse of the cord with non-effaced cervix and small os (living child) once each.

The operation is not recommended to the general practitioner. The same may be said of the Bossi method. The method of election should be combined podalic version and subsequent dilatation with traction on the breech.

Pollitzer[1] reports an unusual application of the *Bossi method.* He was called to see a V-para who, six weeks

(1) Wiener Med. Woch., No. 24, 1906.

before term, had been delivered spontaneously two hours before, after being in labor but one hour. The placenta not making its appearance at the usual time ergot was given several times. The patient lost considerable blood in the meantime and had become very anemic by the time that Pollitzer arrived. Attempts at expression failed and manual removal was decided upon. It was then found that the cervix had reformed, was 1½-2 in. long, and the internal os admitted but one finger (effect of the ergot). Owing to the precarious condition of the patient an anesthetic was considered inadvisable, the Bossi dilator was hurriedly placed, without boiling, into a hot bichlorid solution. It was then introduced into the cervix and in the course of a few minutes it was dilated 2 2-5 in. The placenta was then easily expressed by light external compression. The uterus contracted normally and the hemorrhage ceased.

According to Dührssen,[1] the Bossi method of dilatation of the cervix is *to be resorted to, if at all, by the specialist only.* He considers it superfluous when the cervix is effaced and dangerous to both mother and child when it is not. Metreurysis is the method recommended to the general practitioner, owing to its comparative simplicity and effectiveness.

He also reports two more cases of vaginal Cesarean section successfully terminated. In one case the uterus threatened to rupture and the anterior and posterior walls were incised, after which version was easily performed.

In the other the indication was a severe attack of eclampsia in the seventh month. Recovery was perfect, the convulsions ceasing immediately.

Smith[2] reports his experience with the Bossi dilator in 4 cases. Three were eclamptics, in whom the cervix was effaced or nearly so, with the result that there were no tears. The fourth case was one of placenta previa. There was no effacement of the cervix, in consequence of which a tear followed.

De Seigneux[3] has devised another *modification of the Bossi dilator.* It is simple in construction, easily taken

(1) Arch. f. Gyn., LXXV, Heft. 2.
(2) Dublin Journ. of Med. Science, April, 1905.
(3) Zentralblatt f. Gyn., No. 23, 1905.

apart or assembled. It consists of a handle through which the dilatation is produced and three sets of four branches of various sizes, bent upward at the end. The two smaller sets are applied before introduction and the largest set is fastened piece by piece after introduction into the cervix as with the forceps blades.

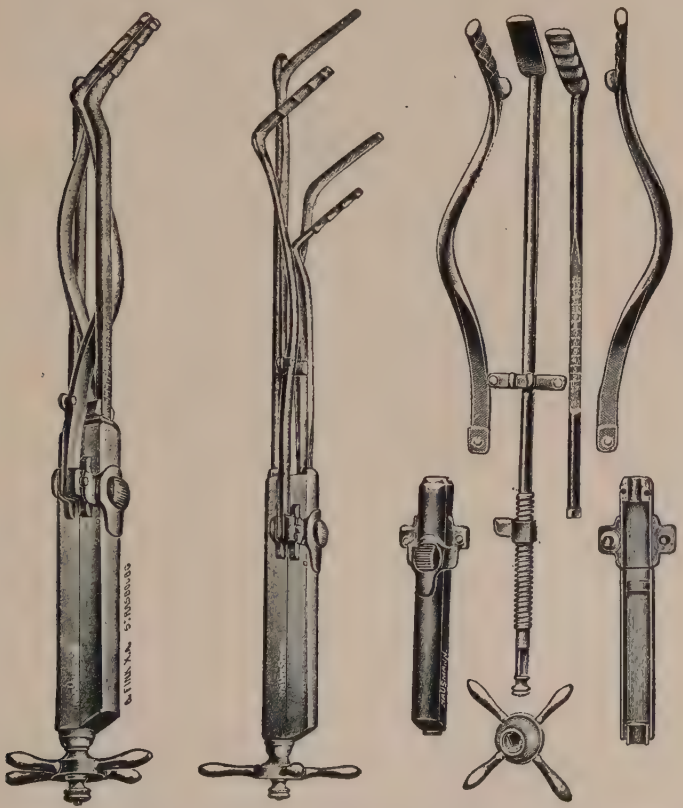

Fig. 4. de Seigneux's four branched uterine dilator. Light model.

The advantages claimed by De Seigneux for his instrument are that the dilatation proceeds parallel to the plane of the pelvic inlet, thereby diminishing the liability to

tear. This danger is further obviated by the opportunity of changing the width of the branches at will and readily. It is easily operated, requires no other assistance since it will hold itself in place, and cannot slip out. He quotes the 7 cases reported by Heller of the Leopold clinic in

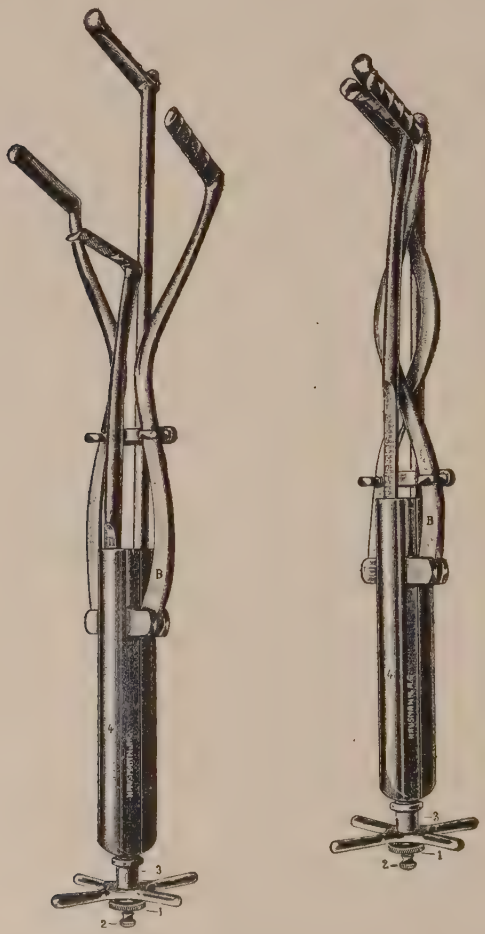

Fig. 5. De Seigneux's heavy dilator.

which this instrument was used without any lacerations being produced. [The Editor has had only fairly satisfactory results with the Bossi dilator. In every case there has been more or less laceration of the cervix, in spite of most painstaking care, and after following out the instructions as laid down by Bossi himself. Therefore the instrument must be sparingly used, and the cervix must be examined frequently to detect the first beginnings of a lacera-

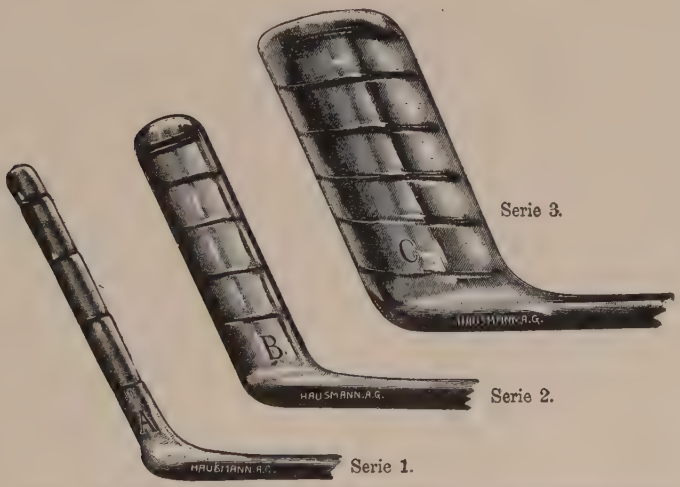

Fig. 6. De Seigneux's dilator, showing detail of the dilating blade.

tion. It is wise to remove the instrument at intervals to determine if the blades are boring into the tissue. It is not an instrument that may be recommended to the general practitioner. In cases of rigid cervix it will tear in spite of everything and when the cervix is soft, the hands will succeed in dilating as well and more safely and intelligently.]

[The methods of dilatation of the parturient cervix most commonly employed are digital or manual, the metreurynter, or rubber bag method, and the cervical incisions of Duehrssen.

The best and safest method of dilating the os is without question the rubber bag. It both mechanically dilates and

stimulates the uterus. Pains thus evoked produce an effacement or shortening of the cervix, an effect obtained by no other method.

Unfortunately these hydrostatic bags are very slow, usually requiring several hours and often several days, to produce complete dilatation.

Where haste is not demanded, and in cases of induced labor to inaugurate pains, they cannot be surpassed. The technic is simple, the sterilized bag, collapsed and folded into a long forceps, is passed into the lower part of the uterus above the cervix, then filled by means of a bulb syringe. Sometimes it helps matters very much if a small amount of traction is put on the bag, either by hand or by means of a pound or 2-pound weight hung from it, and hanging over the foot of the bed.

When the first size bag is expelled a larger one is inserted till the cervix is fully dilated. (Fig. 7.)

The writer is using with success the original Carl Braun colpeurynter and the Voorhees modification of the de Ribes bag.

Bonnaire perfected a method of dilating the cervix and, though it is the way anyone, given the task, would naturally adopt, it is generally known by his name. One after another the fingers are wormed through the cervix. When four finger tips can be gotten through they are placed back to back as in the illustration (Fig. 9) and are pulled apart. Different methods are employed by the accoucheurs; some place the fingers back to back and thus exert a leverage action as devised by the Editor. For insinuating the fingers through a closed os the Editor recommends the method illustrated in Figure 8. The two first fingers having gained entrance, they are pried apart by a finger of the other hand. This is somewhat tiring to the fingers, but it does not need to be kept up long, as we may quickly pass over to direct dilatation.

P. A. Harris has devised a method of one-hand dilatation of the cervix, the fingers one after the other being introduced, and, opposed by the thumb, they are spread, thus dilating the cervical ring. Harris, though an ardent defender of his method, has pitched his tent with the instrumental dilators and has invented an instrument

similar in principle to Bossi's but has attached a dynamometer to it.

Duehrssen, noting how frequently the cervix tore during all forms of forced dilatation, decided to cut the effaced cervix laterally and sagittally. He invented this operation mainly for the purpose of enlarging the os rapidly for delivery in eclampsia cases; later he applied it to many conditions. Duehrssen's cervical incisions may be made only after complete effacement, or shortening of the cervix. At this time the large vessels are drawn up into the body of the uterus out of reach of the scissors, and the incisions will not tear further into the broad ligaments. These have also been stretched upward. By means of an angular scissors the thinned cervix is cut on either side, to the fornix. One may, if necessary, cut both anteriorly and posteriorly. Some recommend to make the incisions diagonally instead of as above described. It is well to apply a heavy forceps on each side of the proposed incision. This limits the cut and stops hemorrhage. (Fig. 10.)

With all methods of enlarging the os it is sometimes necessary to enlarge the vagina-vulvar outlet. If one pulls the child through the vulva forcibly, one may thus sacrifice its life, or rupture the perineum through the anus. A complete laceration of the perineum must be avoided by all means, and for this purpose, as well as to facilitate rapid and safe delivery of the child, a deep episiotomy is recommended.

Fig. 11 shows the best method, in the Editor's opinion. The scissors are placed with the cutting angle on the raphe, the blades lying, one in a line between the tuberosity and the anus, the other in that sulcus of the vagina which (perhaps) has already begun to tear, or in which the occiput lies. The incision takes in the perineum down to the ischiorectal fossa, and cuts the lower edge of the levator ani. One may cut less or more than this, as indicated in Fig. 11.

One must make a large incision, as the anus might be sacrificed if one attempts to deliver after making only a small nick in the resistant perineum. The incision may be prolonged into the ischiorectal fossa if necessary. The Editor has, in a few desperate cases, prolonged the incision alongside the coccyx, with a most happy result. The

incision in the vagina need go only to the extent of 1½ to 2½ inches.

After the delivery is completed the wound is easily repaired, as indicated in Figure 12. One deep, continuous suture of catgut unites the cut surfaces of the levator ani, and a second is placed if needful. Interrupted silk gut sutures are now placed in the usual manner on the vaginal and perineal surfaces, and then the crown suture closes the triangular gap in the fossa navicularis.—Ed.]

Vaginal Cesarean Section.

De Lee[1] says that in the practice of obstetrics the necessity of rapidly emptying the uterus not seldom presents itself. The frequency with which the indication to rapidly terminate pregnancy arises is a point much discussed. It varies greatly in the practice of different accoucheurs. The hardest question to answer in a given case is, shall we or shall we not empty the uterus? If we possessed a method, rapid, easy and safe for mother and child, the decision would not be so difficult. If the authorities were agreed on the plan of treatment of the various obstetric emergencies, the decision would be easier. If the obstructions to the rapid emptying of the uterus were uniformly great, or always similar, one could formulate rules for general guidance.

But since we are forced to accept conditions as we find them, the placing of the indication for the emptying of the uterus will always be a personal one and individual to the case in hand. Still there are certain general principles involved which, with the published experiences of men commanding large series of cases, give us fairly accurate lines on which to direct our treatment.

The most common indication for rapidly evacuating the uterus is eclampsia, yet authorities are divided on the propriety of the operation. Duehrssen, Bossi, Leopold and others favor the termination of pregnancy very early in the course of the disease, while Ahlfeld, Stroganov and others counsel a more expectant plan of treatment and claim better results. The large statistics seem to prove that both the mothers and the infants do better by the

(1) The Chicago Medical Recorder, Sept., 1905.

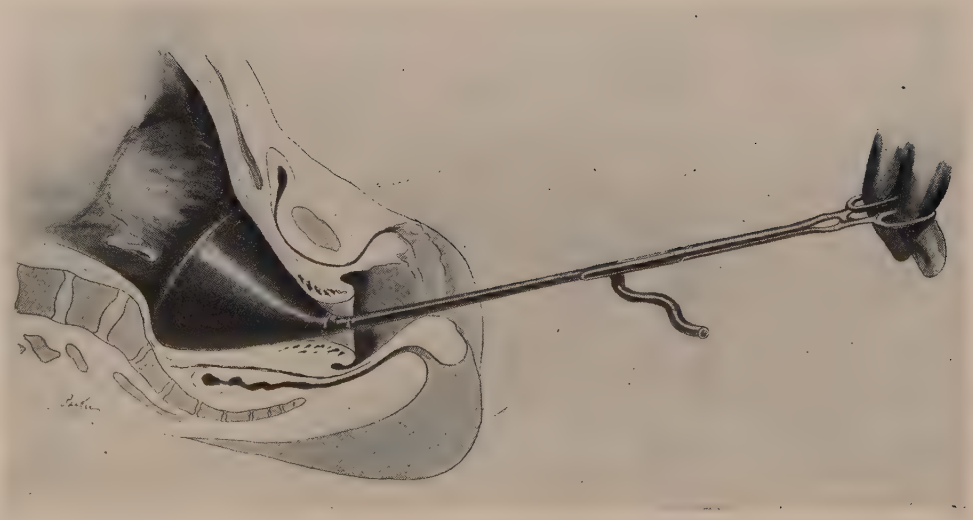

Fig. 7. The Voorhees bag in place dilating the cervix.

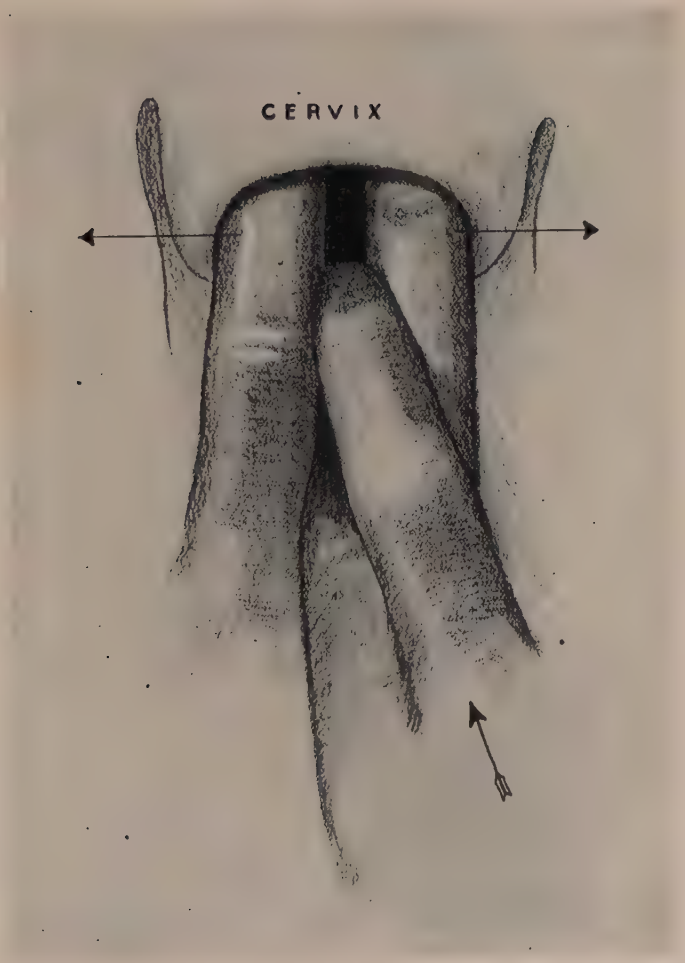

Fig. 8. Digital dilatation of cervix. Editor's method.

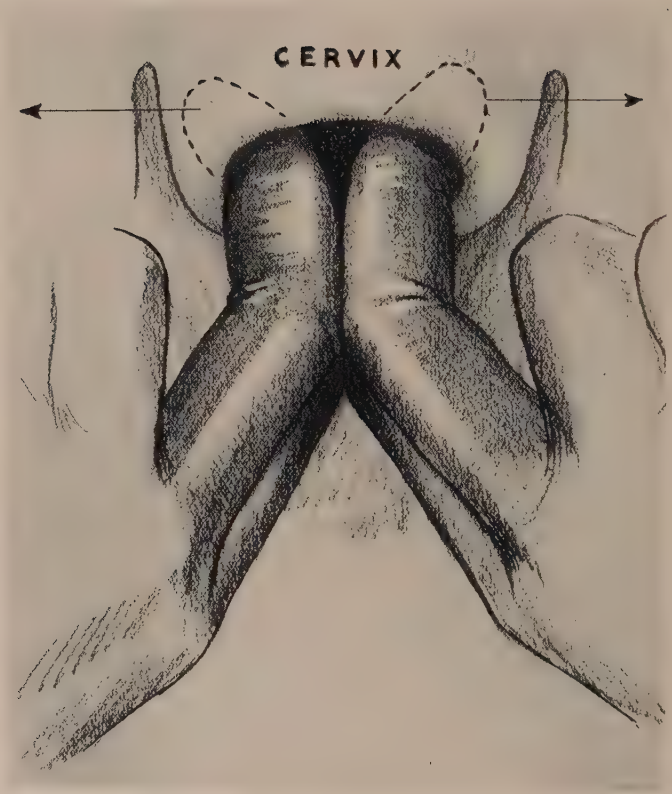

Fig. 9. Digital dilatation of cervix. Editor's method.

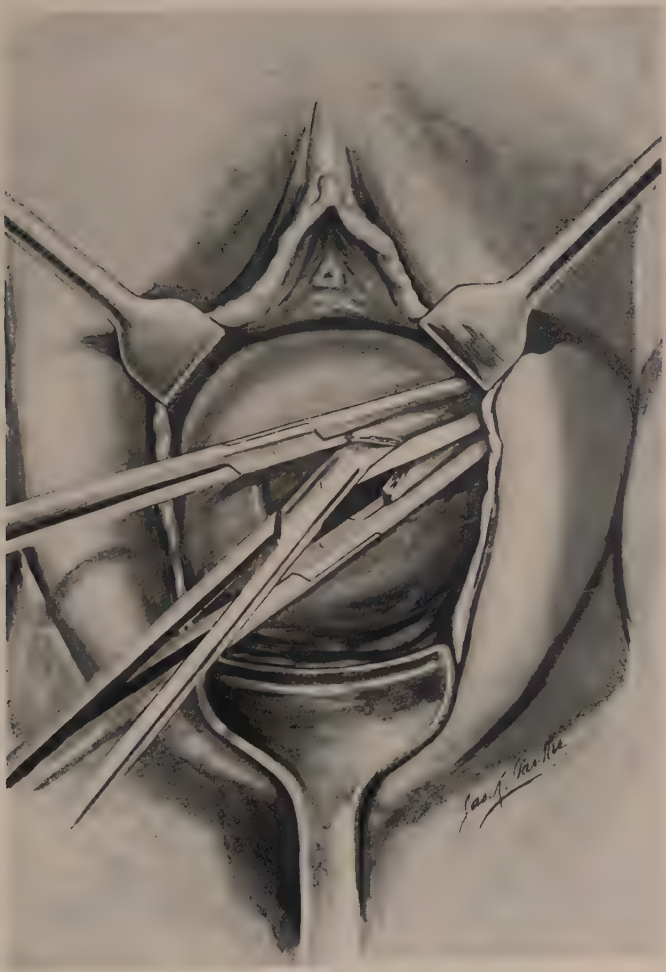

Fig. 10. Duehrssen's cervical incisions.

Fig. 11. The line of incision in episiotomy.

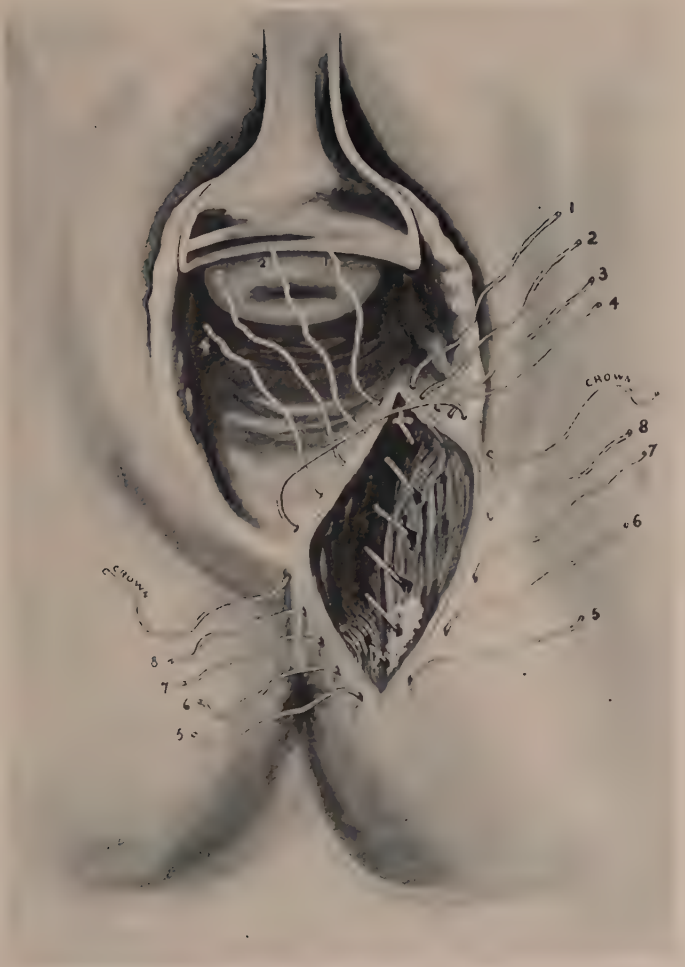

Fig. 12. Suturing the episiotomy wound. First continuous buried suture is in place. The sutures of the vagina and perineum are numbered in the order of their insertion.

rapid delivery. In the writer's experience with eclampsia the results as concerned the mothers are no better than when he employed a more expectant plan, but a larger number of children are saved by earlier interference.

Heart disease will very rarely indicate immediate delivery. Almost always one may await at least complete cervical dilatation.

Placenta previa is almost never a condition demanding the rapid evacuation of the uterus. One must terminate pregnancy, to be sure, but by methods not within the scope of this paper, i. e., the rapid emptying of the uterus. Slow methods should prevail in placenta previa. In very rare instances of placenta previa the abdominal Cesarean section may be justified in view of the difficulties attending delivery through the vagina, and the excessive dangers to mother and fetus.

Abruptio placentæ, premature detachment of the normally implanted placenta, may give an urgent indication for immediate delivery. Some cases of abruption of the placenta terminate spontaneously, and often safely for both mother and child. Others may be treated by temporizing measures, but not a few demand the immediate evacuation of the uterus.

Conditions threatening the life of the child will bring the indication for its quick delivery. Asphyxia in utero from abruption of the placenta, prolapsed cord or from prolonged labor, all make us desire to deliver the child. If the cervix is dilated, the way is easy; if it is not, we must dilate it, in one of the ways to be mentioned.

An old, generally discredited method of rapid delivery is the accouchment forcé. The term means forced delivery and the procedure consisted of dilating the cervix violently with the fingers, the performance of version and rapid extraction of the child. Owing to the high infant and maternal mortality of this operation its use is not recommended by many practical accoucheurs. Schroeder (Geburtshilfte, Seite 304, 14th ed.) says it is never indicated, not even in detachment of the placenta.

The closed cervix offers the main obstruction to delivery, and to overcome this various procedures are recommended.

1—The use of rubber bag dilators, as the Barnes' and

its modifications, whose purpose is to open the cervix by distension applied perpendicularly to its wall; and the colpeurynter (better metreurynter) and its modifications, whose manner of operation is by conical pressure from the inside of the internal os. Both kinds of bags dilate the cervix mechanically but they also evoke labor pains which help the process immensely, and herein lies their safety in distinction from other methods.

2—Manual or digital dilation, by the Harris method or that appealing to every operator, the insertion of the fingers opposed back to back and the stretching of the cervical ring.

3—The instrumental dilator, of which the Bossi is the original type. There have been since Bossi's first instrument hosts of imitators, but with the exception of simplicity of construction, there have been no improvements on Bossi's latest model. The principle was invented by Bossi, and is elastic, constant, distension of the cervix at four or more points.

4—Incisions in the cervix, either multiple small incisions, the ancient method, or deep bilateral incisions, Duehrssen's method, or crucial incisions.

5—The methodical incisions invented by Duehrssen and given by him the name Vaginal Cesarean Section.

6—Leaving the cervix entirely alone and delivering the child by abdominal Cesarean section. This operation is not considered at all in this paper. It is mentioned only for the sake of completeness. It has, however, a place in the debate as to the best method of overcoming resistance offered by the cervix.

Regarding all the five methods of enlarging the cervix it must be said that nearly everything depends on the degree of effacement. If the cervix is effaced, is taken up into the body of the uterus, is shortened, the dilatation is a simple matter and is devoid of danger. Then the large branches of the uterin artery and the plexus of veins around the supravaginal cervix are drawn upward into the lower uterin segment and, even if the thinned cervix tears to the fornices, the hemorrhage is not alarming. The effacement of the cervix is accompanied also by a softening which renders artificial dilatation easier and

less likely to cause lacerations. If the effacement, or shortening, is only half completed more than half is gained, because experience has shown that the partial retraction of the supravaginal portion and the attendant succulence render subsequent artificial dilatation much easier and less hazardous.

The cases of completely closed cervix tax the ingenuity of the accoucheur, and if the tissue of the cervix happens to be particularly hard or otherwise pathogenically altered the difficulties in obtaining a passage for the child may be almost insuperable.

Fieux tells us (Annales de Gyn., Juin, 1903, p. 407) that there are no muscular fibers in the parturient cervix and that therefore "spasmodic" rigidity of the cervix cannot occur. This is at variance with accepted notions of the conditions. Chloroform may relax a cervix, as may also chloral and a warm bath. Probably the frequency of "spasmodic rigidity" of the cervix is exaggerated, and that most of such cases are tetanic rigidity of the uterus, due to over stimulation. In such cases under chloroform the cervix would give way to even light attempts at dilatation.

In primiparæ the cervix is harder to dilate than in multiparæ because, in the latter previous labors have overcome the resistance somewhat. One must be careful, however, as in multiparæ atonic hemorrhages are commoner. The use of rubber bag dilators is not attended by laceration of the cervix unless the bags are filled too full, or if too much traction is made on them. The writer knows of one case in which the uterus was ruptured by the colpeurynter, too much traction being made and too strong pains being produced.

The process of colpeurysis is very slow, hence its safety, and cannot be employed where haste is indicated. Manual and instrumental dilatation is always attended by laceration of the cervix. These lacerations may be more or less deep, but the writer, in many dilatations, has never failed to find them. Their depth and the attendant amount of hemorrhage vary according to the degree of effacement of the cervix as above stated.

In five cases where the writer used the Bossi dilator there were lacerations of the cervix. None was serious

either in depth or by hemorrhage, but one would have been had not the tear been early discovered and the instrument removed. In some cases the cervix is so pathogenically altered that no method of dilatation will succeed, and in these cases one must cut the cervix open or perform vaginal Cesarean section. Duehrssen's lateral incisions occasionally tear further into the parametrium and also may give rise to furious hemorrhage which may baffle one's skill and cause death.

Zweifel (Cent. für Gyn., 1895, Nr. 46, S. 1215) and Gessner (Zeitschr. für Geb. u. Gyn., Bd. 32, S. 290) quote cases where even in a hospital the parturient got into a very critical condition from hemorrhage, and in one case died.

If the cervix is effaced the incisions are relatively safe; if the internal os is closed, the incisions are very dangerous, and the methodical colpohysterotomy is the operation of choice when one wishes to deliver rapidly through the natural passages.

Duehrssen devised and recommended the operation April 1, 1895, and on the 25th of the same month first performed it (Der Vaginale Kaiserschnitt, Berlin, 1896). The result was successful for mother and child. Acconci of Italy devised a similar operation but Duehressen (Der Vaginale Kaiserschnitt, Berlin, 1904) conclusively proves that the honor of priority belongs to himself.

At first Duehrssen's operation acquired few disciples, but after the publication of twenty-two cases by the originator, more were performed. Now the pendulum seems to swing too far and an overzeal to try the new procedure is evidenced by many operators.

While there are still those who say there is no need for the new method of delivery the writer must positively assert, as the result of his own experience, that the vaginal Cesarean section constitutes one of the most valuable additions to obstetric technic contributed in the last thirty years.

The original operation of Duehrssen opened the cervix both posteriorly and anteriorly. Minor features of the operation have been altered by various operators. Bumm, who probably has done more work in this line than any one, uses simply the anterior incision, and for small

children (i. e., in premature labors) the writer follows this plan.

Duehrssen's operation. If the patient is a primipara and near term, a preliminary deep episiotomy is made. The cervix is then exposed by a broad, short perineal retractor, the posterior lip seized by a vulsellum and two long sutures put through it near the middle. The vaginal wall is split posteriorly for 4 or 5 centimeters, the peritoneum of Douglas' cul de sac is pushed up, then, pulling down the cervix by means of the two suture bridles before inserted, the posterior cervical wall is split with scissors upward just through the internal os.

Then the anterior vaginal wall is incised in a similar manner, the bladder is pushed forward, and the anterior cervical wall is split up to the edge of the internal os.

The child is now delivered, the placenta removed manually, the uterus packed with iodoform gauze, and the incisions carefully sutured together.

Following are the steps of the operation in detail, as performed by the writer:

An anesthetizer and at least two assistants are necessary. It would be best to have three assistants, one to hold the speculum and one leg, one to assist with the sewing and to hold the other leg, and the third to thread needles and hand instruments.

The lithotomy position is used, and a good horizontal light is very necessary for accurate work.

If the parturient is close to the end of pregnancy and primiparous it is best to make a deep unilateral episiotomy, on that side to which the occiput points, if forceps are to be used; on the opposite side if version is to be performed. This will avoid laceration of the perineum during the subsequent delivery.

If the episiotomy wound bleeds too freely it may be sewn up temporarily, the line of suture being at right angle to the line of incision.

A short, broad speculum is now inserted to expose the cervix which is drawn down by means of two pairs of double tenaculum forceps. Incisions shown in Fig. 13 are now made. The long cut extends to 1 cm. from the urethra, the short transverse cut encircles the cervix one-

third of its circumference. Both go through the mucous membrane only.

The bladder is now separated from the cervix uteri, and the cervix freed partly from the base of the broad ligaments on either side. Care is necessary here not to go too far to the side as large veins may be encountered. The finger covered with gauze gently rolls the bladder from the cervix until the fold of peritoneum comes into view. The flaps of vagina are held away by the assistants, each corner grasped by an artery forceps.

After the bladder has been pushed up as in Fig. 14, the cervix is split in the median line with scissors. Fig. 15.

When the incision reaches near the peritoneum the tenaculum forceps are replaced by silk or gut strings, and successively higher portions of the uterin wall are drawn down by the vulsellum forceps, and cut by the scissors. Fig. 16. In this way the lower uterin segment may be incised, as it comes down easily by traction made on the anterior wall alone. For a child weighing approximately three and one-half pounds the length of the uterin incision should be no less than 10 cm. If the cervix is already partly dilated the incision need not be so large. If the woman is at or very near term, a posterior incision should also be made.

The posterior lip is grasped by two vulsella, and split down to the peritoneum of Douglas' cul de sac. Fig. 17. This is then pushed up from the cervix and the cervical incision prolonged as much as is considered needful. Duehrssen still insists on the additional posterior incision, especially with large children.

The hemorrhage, during these maneuvers is not very profuse, and is controlled by firm traction on the cervix.

After the internal os is cut the bag of waters or the presenting part falls into the field. Having obtained access to the uterin cavity the delivery is rapidly accomplished. The placenta is quickly removed by hand and the uterus briskly massaged inside and out. If labor pains have been present usually there is no hemorrhage, but if the uterus is atonic, it should be firmly tamponed with a long strip of gauze. Traction is now made on the string bridles, which brings the anterior wall of the uterus into view and lessens the bleeding. The tenaculum forceps are

again used to draw down the upper angle of the uterin wound and a continuous catgut suture is applied for its closure. Fig. 18. The suture should grasp the whole thickness of the wall and the stitches should be close together. It is sometimes possible to place a deep layer and a superficial layer of sutures. Care is needed not to catch the uterin packing gauze in the needle.

After the cervix is sutured the vagina is closed with a continuous twenty-day catgut suture. A small drain of gauze is placed in the vesico-uterin space, and removed at the end of twenty-four hours. If a posterior cervical incision has also been made this must be closed first, by through and through catgut sutures tied on the cervical mucous membrane. The vagina is closed separately with a running catgut suture tied on the vaginal mucous membrane. Then the anterior wound is closed as above described. Finally the perineum is repaired if necessary.

The after treatment is identical with that of a normal labor. Bladder disturbance is more common and more obstinate. It is a good plan to give urotropin prophylactically.

By means of this operation it is possible to gain access to the uterus quickly and at any period of pregnancy and the advantages of such a procedure may be readily appreciated even by those not in active practice as accoucheurs.

Certain objections have been raised against the operation. First that the bladder or the peritoneum may be opened. Duehrssen has proven at postmortems that such was not the case when the technic was properly observed, and Bumm (Report of Meeting at Kiel, June, 1905) says none of his 52 cases tore beyond his incision.

Second, the danger of hemorrhage from the incisions and from the placental site. In the first instance the bleeding, experience has shown, is much less than one would expect, and by keeping in the middle line, not separating the tissues too deeply at the sides, and drawing the uterus well down, no danger has arisen from this source. During the delivery the child tampons the incisions. Post partum hemorrhage, as not seldom occurs with abdominal Cesarean section, was occasionally annoying, but in all the cases was successfully controlled by gauze

uterin tamponade. When the uterus is sutured the bleeding always ceases.

Third, it was feared that the uterus, in subsequent pregnancy and labor, would be likely to rupture. Two cases of labor have already been reported, in neither of which was trouble noted. Examination after recovery has shown that the wounds heal well and leave little scars. V. Bardeleben (Zent. f. Gyn., 1904, Nr. 46) in a recent article reports the results of his examinations made months after operation. The findings were very satisfactory.

The indications for vaginal Cesarean section may be summed up in two sentences:

First, when the cervix is tightly closed and an indication arises for immediate delivery.

Second, when the cervix is pathogenically altered and nature is not able to overcome the obstruction.

Under the first head may be placed eclampsia, detachment of the placenta (abruptio placentæ), uncompensated heart disease, lung disease, with threatening edema, and all acute conditions threatening the life of the mother and making the delivery of the child desirable. When the child is endangered from the above conditions, or from prolapse of the cord the operation may also be indicated. Under the head of obstructions, cancer, stenosis, antefixatio uteri, and scars from old ulceration may be mentioned. One must operate carefully in cases where portions of the cervix have ulcerated away as one may unexpectedly open the bladder or peritoneum. In one case the writer came upon an old abscess which was in communication with the rectum, a relic of a previous septic infection, and in another case there was no cervix, the vagina being united to the lower uterin segment. In cases of carcinoma, after the delivery of the child, the bisection of the uterus should be continued and the whole organ removed in two sections after the method of Mueller.

In conclusion the writer will report two cases of five in which the operation was performed:

Case 1. Mrs. G., primipara. Began to have eclamptic convulsions December 27, 1904, early in the morning, and was transported to Wesley Hospital at noon. She was in deep coma with high fever, rapid pulse and marked cyanosis. The convulsions were recurring every 15 to

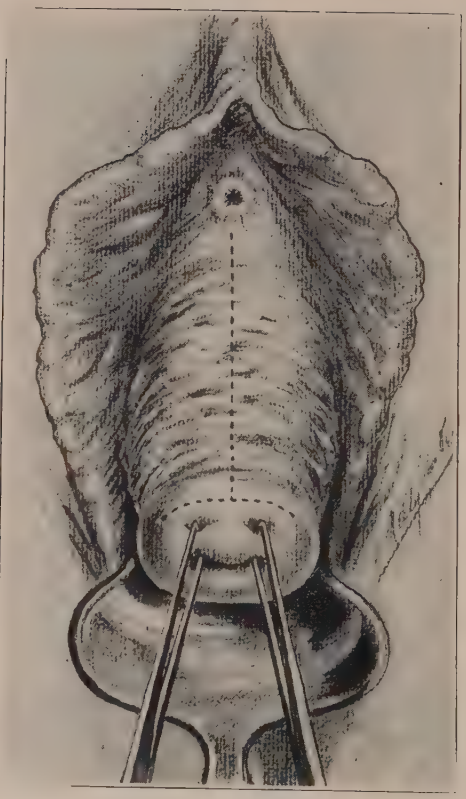

Fig. 13. Shows lines of incisions.

Fig. 14. Pushing the bladder from anterior uterine wall. Finger is covered with gauze.

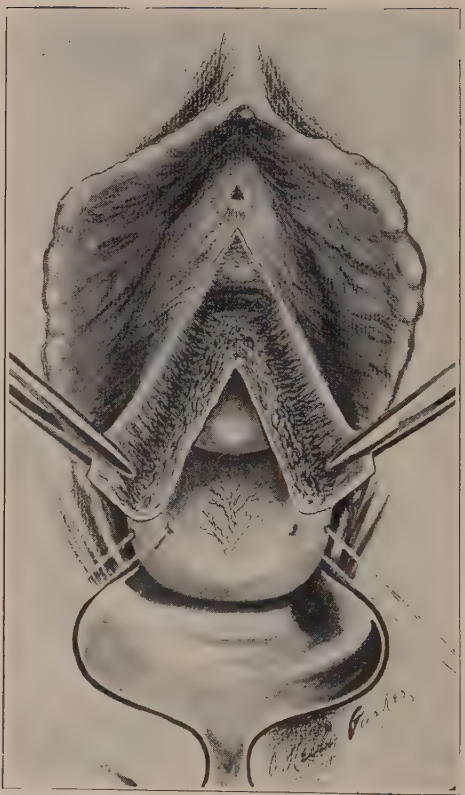

Fig. 15. Uterus incised through internal os. Bag of waters showing.

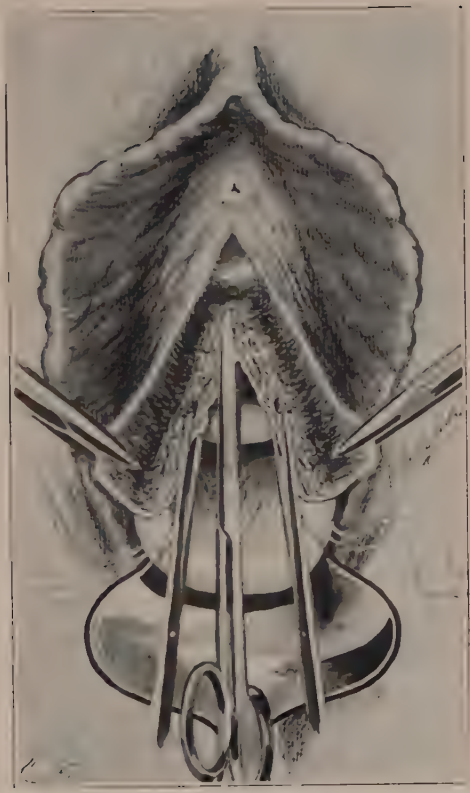

Fig. 16. Edges of uterus being drawn down and scissors cutting the lower uterine segment. Note peritoneal pouch at upper end of incision.

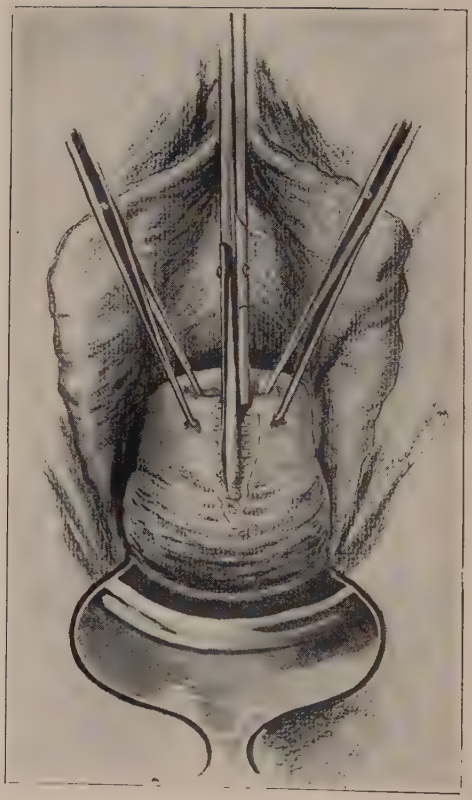

Fig. 17. Incising the posterior lip of cervix.

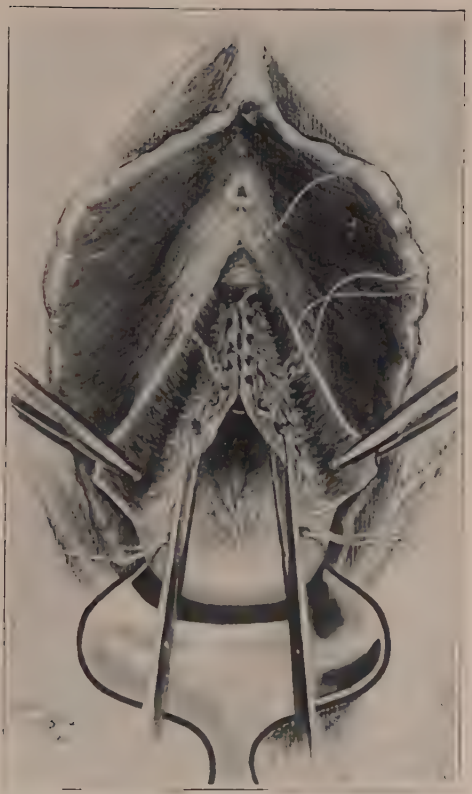

Fig. 18. First row of sutures being placed. Over this a second row is inserted. Then the vaginal incision is closed.

20 minutes. Pregnancy had proceeded to 7½ months and labor had not begun. Heart tones were not audible. The cervix was long and completely closed.

Vaginal Cesarean section was immediately performed and the dead fetus easily removed. During the operation the patient had two severe convulsions, in spite of deep anesthesia. No effect was produced on the course of the disease and the patient succumbed in 12 hours.

Case 2. Mrs. A., primipara, age 27. Has always been sickly, pale and sallow. Had severe tonsillitis 2 years ago. Hyperemesis in the early months of pregnancy. For the last 10 days albuminuria, edema of feet and during the last night severe headache. Now 6½ months pregnant. Premature labor began at 2 a. m. and at 8 a. m. external hemorrhage appeared, coincidentally with which the headache ceased. At 10 a. m. the patient had continuous abdominal pain, quite profuse flowing, and had the usual symptoms of internal hemorrhage. The uterus was hard and tense, no contradictions were determinable, nor could the heart tones be heard. The cervix was long and tightly closed.

Urgent necessity for quick delivery was apparent as the diagnosis of premature detachment of the placenta (abruptio placentæ) was certain.

Vaginal Cesarean section was performed. The child was in breech presentation, and owing to the excessively rigid genitalia craniotomy was done. As the fetus was dead there was no compunction about this. The uterus was sutured with catgut in two layers. Patient had slight fever in the puerperium but no cause could be found for it. No treatment was instituted. Recovery prompt. Five months later the uterus was found anteverted, freely movable, painless, and the scar in the anterior vaginal wall was hardly perceptible.

Duehrssen is entitled to credit for introducing 2 valuable operations into obstetric practice, the uterin tamponade for post partum hemorrhage, and the vaginal Cesarean section.

Forceps on the Breech. A practically obsolete method, that of applying the forceps to the breech, is being revived by several writers, among them Gauss,[1] a former assistant

(1) Zeitsch f. Geb. u. Gyn., Band. 55.

of Ohlshausen. He claims that—under certain conditions and with proper technic—the forceps may be applied to the breech with success and without danger to mother or child. His opinions are based upon the literature, and a series of 9 personal cases in the course of 5 months.

The maternal mortality was 0, and the fetal, 33⅓ per cent. One of the three was anencephalic, and the other two were in great danger before the application of forceps, other methods having already been attempted. Four of those saved were also in a precarious condition prior to delivery.

Fracture of the femur occurred twice, though only once as a result of the forceps, the Küstner hook being responsible for the other. The maternal parts were not lacerated any more than under normal conditions. Tears of consequence occurred in 4 cases; one, a complete tear, was the result of manual attempts at delivery before the application of the forceps. The others were a first degree perineal, a vaginal, and an episiotomy tear.

In applying the forceps it is important that the anterior crests of the ileum and the trochanters be included in the fenestra of the instrument.

The forceps are contraindicated when the breech is high, and it is still possible to bring down a foot, but when it *is* engaged or nearly so, it is often impossible, or at least extremely difficult to extract with the finger in the groin. The tape may only be introduced with difficulty and ofttimes not at all, and is not unaccompanied by dangers for the child. The introduction of the hook into the anterior groin may be easy, but is very dangerous. Its introduction into the posterior groin is less dangerous but very difficult. The forceps is easily applied and if properly done the extraction is easy and not dangerous.

[The Editor has never failed, even when the breech has entered the pelvis, to get a foot down on which to make the extraction. Bringing down one leg breaks up the blunt wedge and facilitates delivery very much. The forceps fit on the breech like "a fist on the eye."]

High Forceps. G. Schmauch[1] claims one bad feature of the axis traction forceps is the fact the fetal head is so

(1) Illinois Med. Journ., May, 1905.

firmly grasped by its compression apparatus that it loses its own movability, and as a result the directing influence of the pelvic walls and genital canal is entirely obliterated. The principal value of the instrument is that one is enabled to make traction on the head in the correct direction and the force applied in a wrong axis is reduced to a minimum. With this instrument the pressure of the head passing through the inlet is evenly distributed over the entire brim and not solely upon the symphysis, as happens in the common forceps. It is very difficult to estimate and gauge the force necessary to pull the head into the inlet with the common forceps when the application is so high that the lock lies within the vulva, and great force is liable to cause a rupture of the symphysis. Rudaux, in a review of 98 cases of rupture of the symphysis comes to the conclusion that the accident has become very rare after the introduction of the high forceps.

Schmauch recommends that the axis traction forceps should be used only to pull the head into the pelvis in the direction of the axis, the further traction and delivery being better accomplished by the common instrument.

Whenever instruments have been introduced into the uterin cavity, a speedy termination of the labor becomes desirable. A former and unsuccessful attempt to deliver with forceps by one whose aseptic technic is suspicious is always to be taken as a positive indication to deliver the patient. If, after an unsuccessful forceps attempt, the fetus is still alive and viable, only symphysiotomy or pubiotomy will save it, otherwise embryotomy has to be resorted to.

The author remonstrates against the statement that the field for the high forceps is where the head lies entirely above the brim, freely movable or not, or the head engaged by its smaller segment, whether movable or not. He positively states there is no relation between forceps and version, that where one operation is indicated, the other is contraindicated. If the head is movable above the pelvic brim, version alone is called for, whereas, when the head is hardly movable in the pelvic inlet, when it is moulded and adapted by the uterin contractions, high forceps is the only legitimate operation and podalic version is both dangerous and uncalled for. The high forceps operation

has a much larger field in primiparæ than version, on account of the rigidity of the soft parts, and the resultant difficulty in the fetal extraction.

The four indications for version in primiparæ with contracted pelves, as recommended by Winter, still hold good:

1. Prolapse of the umbilical cord.
2. Prolapse of the extremities if they cannot be replaced.
3. Permanent unfavorable presentation of the head.
4. Absolute standstill of labor and the condition of the mother.

Winter further observed that when a disturbance in the placental circulation indicates the delivery, those children born by version as a rule die during the performance of the operation, while those extracted by forceps live.

The pelvic inlet forceps are indicated by the following conditions:

1. Direct danger to the mother (only an attempt is here allowed).
2. Danger to fetus. Sinking of the fetal heart tones, while meconium passes away for hours.
3. Complete standstill of labor, due to uterin inertia, where the powers of labor are not strong enough to force the head into the inlet.

A modification of the *technic of the high forceps operation* with a large head at the inlet is furnished by Muus.[1] Complete dilatation of the os and a non-contracted pelvis are the conditions required. The right hand is introduced and the head grasped; the left hand is applied to the head externally, and aids in rotating the occiput to the front, flexing the head and bringing the small fontanelle to the lowest position. The left blade is then introduced and the hand withdrawn. The left hand is then introduced and fixes the head against the left blade, after which the right blade is applied and adapted. The extraction is then easy. The forceps always lies parallel to the occipito-mental diameter.

He performed the operation seven times with posterior positions in this way and saved all the mothers and babes. It was also successfully used after version had been performed on account of a scapular presentation. He would

(1) Zentralb. f. Gyn., No. 27, 1905.

recommend it also in face presentations with the chin posterior.

[The Germans are only beginning to appreciate the possibilities of the hand in correcting malpositions of the head. American obstetricians have practiced and taught this and other uses of the hand for decades. The correction of occipito-posterior positions by manipulation is a daily occurrence and this method of applying forceps has been used by the Editor for years.]

Spontaneous Correction of Face Presentation. Friolet[1] reports two very interesting cases of face presentation which were corrected spontaneously. In one, a primary face presentation, in a woman with a normal pelvis and a normally developed child, was converted spontaneously into an occipitoanterior position after the head was fixed and nearly engaged and after the bag of waters had been ruptured 7 hours. This is the only case of its kind on record. In the three similar cases the head was, in each case, movable and at the inlet, and the membranes had not yet ruptured, excepting just before in one case.

In the second case the procedure was reversed. The woman was a rachitic and had a flat rachitic pelvis and a small child. At the first examination the head was in a posterior parietal position. The promontory was easily reached and the membranes were ruptured. Later on the sagittal suture, advanced to about midway between promontory and symphysis, with the head in the military attitude, the large fontanelle being but slightly lower than the small one. Six hours later the head was flexed, in the transverse, and practically engaged. The patient was given morphin for the second time on account of the severity of the pains and rested fairly well during the night. In the morning, 14 hours later, the large fontanelle was again found lower than the small one. In less than one hour the head appeared at the vulva with the brow presenting and was delivered as such in 10 minutes.

[Occasionally one finds, at the beginning of labor that the head presents in a deflected attitude. Even the face may present, but as labor goes on the natural flexion takes place. No treatment other than proper posture for

(1) Zeitsch f. Geb. u. Gyn., B. LIV, H. 3.

the woman is needed. The patient is allowed to lie on the side to which the occiput points. One may thus safely await the dilatation of the cervix.—Ed.]

Manual Correction of Face and Brow Presentation. Attempts were made to correct 23 out of 37 face and brow presentations occurring in Doederlein's clinic, according to Hellendall,[1] with success in 15 cases. Of the 8 that failed, 6 were delivered alive. These manipulations were unaccompanied by injury to mother or child. Though the successes and failures in correcting the face presentations were nearly equal, the successes in correcting the brow presentations were much greater in proportion. In the 14 cases in which no attempts at correction were made, 3 children were lost, whereas in the 15 successfully corrected cases and in the face cases that could not be corrected, not a child was lost.

The indication for correction is unnecessary delay at the end of the first stage or during the second. (A brow presentation is in itself an indication.) The heart tones of the child must be controlled after the correction. It is absolutely necessary that a spontaneous or forceps delivery is possible before making attempts at correction.

The chief conditions are that the os must be nearly dilated and the cervix effaced. The conjugata vera should not be much less than 3 3-5 in. and the head must not be too large. The head should preferably be movable, and above the inlet, though attempts may be made when the head is in the pelvis. All brusque or rough manipulations are to be interdicted. In case of great difficulties the attempts should cease. After correction the Walcher position, combined with repeated impressions of the head into the pelvis is recommended. Threatened asphyxia must be anticipated and forceps applied when necessary. If the labor continues 3-4 hours longer it should be terminated with forceps.

Expectant treatment is indicated if the correction fails; if the brow presents and is high up, version is indicated, and if it is engaged or nearly so, expectant treatment is also indicated.

Contracted pelvis, which would prevent spontaneous de-

(1) Münch. med. Woch., No. 24, 1905.

livery, prolapse of the cord, placenta previa, and thinning of the lower uterin segment are contraindications for correction. The Thorn and the combined Schatz and Baudelocque methods were the ones used. The fetal mortality in 136 successfully corrected cases was 8.82 per cent. With expectant treatment in face presentation it was 17 per cent, and 38-44 per cent in cases of version in brow presentation.

The question of whether changing the attitude of the child in a face presentation possesses any special advantage is considered by von Herff[1] in an analysis of 100 cases treated expectantly. Seventy-four were delivered spontaneously and but 3 babies died, a mortality of 4 per cent. Twenty-four of the cases were terminated by operative measures, with a loss of 9 babies (37.5 per cent), though in reality but 21 cases, with 6 deaths (28.5 per cent) should be counted. The general average mortality was 9.3 per cent. There were no maternal deaths.

V. Herff concludes it is much better to treat the cases expectantly in private practice, because it gives the best results for mother and child. In brow cases it is better to convert them into occipitoposterior or face presentations.

[The treatment of face presentation is in the highest degree individual. It depends on the individual case and the individual physician. A face presentation occurs so rarely in the practice of the general physician that the best advice to him is to leave it alone. Nature terminates such a large proportion of these cases happily that, as a rule, no interference is advisable. In the hands of the practiced accoucheur, however, a more active policy may be safely pursued. For him the rule should be to change all mentoposteriors to occipitoanteriors. Original mentoanterior positions almost never require interference, except perhaps low forceps. In these cases a high degree of expectancy should be practiced. The Editor in last year's Year Book, described in full his method of changing face to occipital presentation and since last year has successfully performed the operation twice.]

Prophylactic Version. The term "prophylactic version" is variously defined and in the Schauta clinic, according to

(1) Münch. med. Woch., No. 32, 1905.

Krause,[1] it means those versions by which a head presentation is converted into a breech on account of a contracted pelvis, upon the assumption that the aftercoming head may be delivered through the pelvis more readily than the preceding head.

Out of 40,000 deliveries in the Schauta clinic in 13 years, 117 prophylactic versions were performed; 91 times in multiparæ and 26 times in primiparæ. One patient died of sepsis; in 11 cases there was some fever. Of the severer lacerations there were 3 complete in primiparæ, 3 extensive or large cervical tears and 1 rupture of the uterus, necessitating removal of the same. Thirty of the infants died during or soon after delivery (7 were of primiparæ and 23 of multiparæ), a mortality of 25.6 per cent.

The results for the mothers were better or equally as good as they would have been with any other treatment. Of the fetuses that died none weighed less than 8 pounds. Craniotomy had to be perfomed 8 times.

Before performing prophylactic version, on account of a contracted pelvis, it is not only necessary to consider the degree and form of the contraction, but also the size and presentation of the head. In multiparæ, careful consideration of the course and mechanism of previous labors is important, and in primiparæ a considerable degree of watchful expectancy is required, especially until some time after the rupture of the membranes.

Version and Delivery of the Arm. Owing to the high fetal mortality in delivery of the aftercoming head, which is so often complicated by the extraction of the first arm, Apfelstedt[2] suggests that, in all cases of podalic version, the arm corresponding to the foot on which the version is performed, be drawn down as a prophylactic measure. He attributes the complication arising with the arm to an incorrect attitude of the fetus, a lack of muscular tonus, or the manner in which the version was performed. With the arm brought down so it will lie alongside the trunk of the child after version is completed (and Apfelstedt does not consider it necessary to attach a sling to prevent it from becoming impacted) the time that might necessarily

(1) Zeitsch. f. Geb. u. Gyn., B. LVI, H. 1.
(2) Berlin klin. Woch., No. 50, 1905.

be required to deliver the arm and which might result in the death of the fetus, would be economized. The liability of fracture would also be decidedly reduced. The prolapsed arm also favors anterior rotation of the trunk when it lies posterior to it. The danger of rupture of the uterus is not increased, though the method is not recommended to the general practitioner. [Not a new suggestion, but a good one. It is best to put a sling on the delivered arm as it might be drawn up into the nape of the neck and get out of reach. During the extraction the assistant exerts slight traction on the sling. The arm is thus delivered with the trunk. It also increases the diameter of the part and thus the dilatation of the cervix, making the passage of the head easier.—Ed.]

Craniotomy on the living Child. I. Marx[1] refers to the difficulty in deciding upon the craniotomy, Cesarean section or symphysiotomy to save a living child. He agrees with Jacobi that every second added to the duration of asphyxia adds to the danger to life or to an impaired human existence. Many children who are born asphyxiated because of interrupted circulation and compression of the head die during the first few days of extrauterin life, or if they live, are often apt to be paralytic, idiotic or epileptic. Under the absolute indication for craniotomy on the living child, Marx gives a vital deformity of the fetus, such as huge hydrocephalus and other monsters, and further, those cases where the life or health of the fetus is jeopardized by the difficulty of the labor or the traction necessary to deliver.

In cases where by reason of pelvic deformity or tumors the choice must be made at term between Cesarean section and craniotomy, the wish of the family must always be satisfied, and if the former is refused, the attendant has no other procedure except craniotomy. If the mother is not in the proper condition to withstand a laparotomy, by reason of sepsis or exhaustion, craniotomy on the living fetus is the only alternative.

[Without doubt the hardest question in all obstetrics, and probably all medicine presents none more difficult, is to decide whether a given head will go through a given

(1) Medical Record, June 10, 1905.

pelvis safely for both. Pelvic mensuration and cephalic mensuration help in the decision, but they give only relative information. They are not scientifically accurate. The presentation and position of the child are of great importance; the hardness and shape of its head have much to do with the ease with which it traverses the birth-canal; the asymmetry of the pelvis, the development of the muscles, the conformation of the soft parts, all these have to do with the mechanism of labor on which so much depends. The condition of the uterus, its nervous status, the location of the placenta, the toughness of the membrane, and still many more conditions all present problems for discussion and decision, on which a course of procedure is to be mapped out. Small wonder then that the judgment of even the experienced accoucheur may err, and after confidently predicting a normal delivery, he is confronted with the necessity of performing Cesarean section or a craniotomy. One may thus appreciate the importance of careful attention to the details of the obstetric case, early and throughout labor so that the favorable time for the performance of a Cesarean section or a pubiotomy be not allowed to slip away. If the mother is brought low by delay, or by ineffectual attempts at delivery nothing is gained by the former operations, everything is risked, wherefore craniotomy is the safest alternative. Preventive obstetrics should be the slogan.—Ed.]

Cesarean Section. Neumann[1] furnishes a statistical report of 175 cases performed during the last 20 years in the Schauta clinic. In 47 there was an absolute indication; relative in 111 cases, stenosis of soft parts in 6, tumors of the adnexa and pelvis in 3, malignant tumor of the pelvis 1, eclampsia in 5, and septic endometritis sub-partu in 2. In 141 cases the generative function was preserved, the Porro operation was performed 15 times, total extirpation once, and sterilization with preservation of the uterus 18 times. The longitudinal anterior incision of the uterus was made 141 times, the transverse fundal 31 times, and the longitudinal incision over the fundus, on account of adhesions, etc., 3 times. In 15 cases the section was performed twice.

(1) Zentralb. f. Gyn., No. 29, 1905.

The total mortality of the 67 cases operated prior to September, 1897, was 11.9 per cent (8 cases), but by deducting 2 Porro operations (uterus being already infected) and 2 eclampsias, there remain but 4 cases (6.3 per cent). The total number of deaths up to the present time has been 14. Five were operated on account of absolute pelvic contraction (Porro once), 3 were operated with a relative indication, 1 on account of a malignant tumor, with absolute indication, 3 on account of eclampsia (1 Porro) and 2 on account of endometritis (Porro). In 6 cases the cause of death should not be attributed to the operation, since it was cerebral softening once, eclampsia twice, miliary tuberculosis with eclampsia once, septic endometritis twice. There remains, therefore, 8 deaths out of 169 cases (4.7 per cent) compared to 4 deaths out of 63 cases (6.3 per cent) in the first period of 12 years. Comparing the first 10 years with the second 10, the figures are 10.2 and 2.3 per cent. Taking the cases only in which the indication was only relative (111) there were 2 deaths (less than 2 per cent). There was one series of 75 consecutive cases without a death.

Of the infants 165 were born alive, 9 were dead (absolutely contracted pelves) and 1 in a case of absolutely contracted pelvis was born asphyxiated and died one-half hour later.

Dauber[1] states that out of 7,533 labors conducted in the Hofmeier clinic (Wurzburg) *Cesarean section* was performed 30 times; practically the same proportion as in the Leopold clinic (1:224).

The chief indication was a contracted pelvis (86.6 per cent). Of these 26 pelves, 15 were rachitic, 10 osteomalacic and 1 Nægelé. The proportion of osteomalacic pelves is very high when compared with the statistics from Berlin, where the disease is rare, though it is about the same as the Viennese.

The conservative section was performed 16 times, and in the remainder the uterus was removed 6 times by the Porro method and 8 times by supravaginal amputation, with retroperitoneal disposal of the stump. The operation

(1) Zeitsch. f. Geb. u. Gyn., B. LIV, H. 2.

was absolutely indicated 13 times. In 1 case the indication was a very severe eclampsia, which resulted fatally.

Twenty-five children were dismissed in good condition. The death of the remaining 5 could not be attributed to the operation. Three of the mothers died, a mortality of 10 per cent, which corresponds to the general average.

Dauber fails to see any advantage in the Fritsch incision. It was performed 3 times, but only once with satisfaction. In 7 the placenta was located entirely or nearly so in the fundus, consequently would have been involved in the incision. He also refers to a case in the literature which tends to overthrow Fritsch's argument that adhesions do not occur, in which there were adhesions between the uterus and the intestines which required a secondary laparotomy to save the patient.

J. D. Voorhees[1] reports a series of Cesarean sections in which all the children and 6 mothers were saved. In commenting upon the cases the author states the field for Cesarean section should be much enlarged, as the modern technic and aseptic treatment have greatly reduced the mortality of this procedure. In the Sloane Maternity Hospital (New York) from 1888-98, in 7,205 cases, not one was delivered by the abdominal route. During this time there were 80 high forceps deliveries, with a fetal mortality of 38.7 per cent and a maternal of 2.5 per cent. In 25 of these cases the indications for the forceps was a contracted pelvis and here the fetal mortality was 60 per cent. During this time there were 87 medium forceps operations, from which 29 babies died (33⅓ per cent). There was a maternal mortality from the operation of 2.3 per cent. Nineteen of these operations were done in a deformed pelvis and 5 babies died (26.3 per cent).

During this period there were 183 podalic versions, with 73 still births and 15 children dying subsequently. Of these 21 were nonviable or macerated. This makes a fetal mortality of 34.5 per cent. Thirty-nine operations were done for contracted pelvis, with a fetal mortality of 64 per cent. In these cases there was a maternal mortality of 2.2 per cent. Craniotomy was performed 56 times and excluding deaths from other causes, there was from this operation a maternal mortality of 8 per cent.

(1) Am. Jour. Obst., August, 1905.

From 1898 to 1904 there were 8,406 deliveries. At this period there were 149 high forceps deliveries performed. Sixty-seven babies died, or 44.9 per cent; 55.7 per cent died in the 70 cases of contracted pelves. The maternal mortality was 1.3 per cent. Two hundred and eleven medium forceps resulted in a fetal mortality of 13.1 per cent. Thirty-one pelves were contracted, with a mortality of 16.1 per cent. Two hundred and eighty-one versions lost 54.1 per cent of the babies; 64 deformed pelves gave the mortality of 39 per cent; 70 craniotomies destroyed 3.2 per cent of the mothers.

From 1898 to the present time, 38 Cesarean sections have been done. Three patients died, a mortality of 7.8 per cent; 1 from cerebral embolus, 1 from pyemia and the third was moribund. No babies died from the operation, though 2 died subsequently from malnutrition (5.4 per cent). These statistics are unsatisfactory because many of the cases are brought into the hospital in poor condition and late in the labor. Many of these children, therefore, died from other causes, as malnutrition, or were sacrificed to save the mother.

Voorhees believes the absolute indication for Cesarean section should be a true conjugate of 7 cm. or less, and that the relative indication should be broadened to the limit where forceps applied at the pelvic inlet fail to advance the head after moderate tractions are used. Very few children survive after version and extraction in a pelvis with a conjugata vera of 8 cm. The prolonged traction by the forceps for half an hour to an hour and a half without any advance of the head is condemned. He also believes when labor has started in spontaneously or has been induced, Nature should be given a chance first, and that Cesarean section should be performed only when one is sure the birth of a living child through the pelvis is reasonably impossible. [Statistics are notoriously unreliable, yet we get a certain kind of information from them. These figures of Voorhees show that prophylactic version, high forceps, and, in general, powerful attempts at delivery are attended with high initial mortality to both mother and babe. One must always make allowance for the amount of unnecessary mortality, because many of these cases were delivered to the hospital, already in-

fected or mutilated by the previous attempts of others to deliver. It is safe to say that neither of the operations has, in skilled hands, a necessary mortality for the mother. They do have for the babies, and even if the child is delivered alive, it often is so injured that it dies within a few days. When the child is lost we ask ourselves, *"how much injury has the mother sustained?"* If she has a complete perineal laceration or other serious injuries the case must be counted a failure and one will have no pleasure from the, perhaps spectacular, accouchement by high forceps or version. A craniotomy in the first place would have been more merciful to both mother and babe. We greet with deep felt gratitude, therefore, all attempts to increase the safety of Cesarean section and pubiotomy. Speed the day when craniotomy may not be practiced.]

Myoma and Ovarian Tumors as Indications for Cesarean Section. Kallmorgen[1] reports 4 cases in which he performed laparotomy at the end of pregnancy, first emptied the uterus and then removed the tumors. In 2 the Porro amputation was performed on account of myomata. In the other 2 ovarian tumors were removed.

The myomata were on the posterior surface of the uterus and of such size that if left would have again produced a hindrance to labor, hence the uterus was removed.

The ovarian tumors were situated posteriorly, and in such a position that they could not be brought to the front and removed without emptying the uterus.

Osteomalacia, Cesarean Section, Bilateral Oophorectomy. In the case reported by Rossier[2] the patient was 29 years old, she had borne two children under normal conditions, 7 and 5 years previously, and nursed both. At the time of entering the hospital she presented the typical signs of osteomalacia. Pressure on the bones, especially the pelvic, produced considerable pain. Walking was difficult. The pelvis was Y-shaped, the symphysis being beaked. The bitrochanteric and biischial diameters were markedly diminished (characteristic of osteomalacia). The sacrum was enlarged and prominent (*Sitzbecken*). The conj. diag. was 8 cm., conj. vera 6.5 cm., obstetrical conj. 4.5 cm.

(1) Zeitsch. f. Geb. u. Gyn., Band. LV.
(2) Ann. de Gyn. et Obst., August, 1905.

Cesarean section was performed and a living child delivered. The ovaries were removed and the stumps ligated with silk. Two days after the operation the pain, produced by pressure on the bones, had already diminished. Two months later she was very much improved. Eight months later her height had diminished ½ in., but the pains had not increased, though the bones seemed softer. After the sixth month the menses returned and appeared regularly and abundant thereafter.

Ten months after the operation she was again suffering and entered the hospital once more at the end of 15 months for a second operation. She suffered severely and was unable to walk or move. Her height had diminished nearly 4 in. Pelvis very much more deformed. Laparotomy was performed and a small swelling removed from the right broad ligament, which contained ovarian tissue, some corpora albicantia, a small follicular cyst, but *no* ovules. The operation furnished no relief and the disease advanced rapidly. Fourteen months later she wrote that she was bedridden and suffered severely, especially during cold weather.

Rossier considers the case a very malignant sporadic type. The question remains whether the disease persisted on account of ovarian tissue retained elsewhere or the presence of a third ovary. The writer reserves the Porro operation for infected cases.

Conservative Cesarean Section with Tympanites Uteri. Mueller[1] reports a case in a dwarf with a generally contracted rachitic pelvis. Section was absolutely indicated and had been arranged for some time previous. Nevertheless she went to some other physician 4 days before labor and was examined several times. The membranes ruptured at the same time. The writer was ignorant of this fact at the time of the operation, having been told that this had all taken place the morning before and that the child was alive.

When the uterus was opened the membranes were found to be dark green and fetid gas escaped. The wound and peritoneal cavity were protected by means of gauze, etc., after which a large macerated fetus was delivered. After removal of the placenta the uterus was wiped out with

(1) Zentralb. f. Gyn., No. 29, 1905.

gauze soaked in 92 per cent alcohol. All the greenish spots were removed, after which the cavity was perfectly dry. A gauze drain, soaked in alcohol, was passed through the vagina. The abdominal wound was also drained. They were removed on the third day. That from the vagina had no odor. That from the abdomen contained some pus. Recovery was uneventful, excepting a foul discharge from uterus on the sixth day, which was overcome by douching. Six months later still amenorrhea. Uterus very small. [Rather hazardous. The safest plan would have been the removal of the uterus. In the Editor's opinion this should be the rule in the presence of infection.]

Cesarean Section on the Dying. But 2 cases of Cesarean section on the moribund had been reported since 1900, and Futh[1] now reports a third. The patient was a VI-para, who suffered from a mitral stenosis and insufficiency, aortic insufficiency and dilatation of the heart. She was suddenly seized with an attack of dyspnea, cyanosis became extreme; she coughed up one pint of light red-stained sputum and fluid; the pulse became very rapid, and soon could no longer be felt, and unconsciousness set in. Owing to the failure of stimulants, Cesarean section was performed and a living child delivered. The patient immediately improved and regained consciousness, and lived until the fifth day post partum, when death occurred suddenly.

The case might not be considered in a correct sense one of section on the moribund, though it was considered soon otherwise, and that it would have been unwise to wait longer, since the chances of saving the fetus would have been diminished or lost.

Busalla[2] advises considerable deliberation and conservatism before performing *Cesarean section on the dying or apparently dying,* especially with heart lesions or eclampsia. The unexpected sometimes happens and he cites a case which illustrates this point.

The patient was a primipara who had already had 11 eclamptic convulsions. Her condition, by that time, had become so grave that Cesarean section was performed to save the child after it had been determined that it was

(1) Zentralblatt f. Gyn., No. 23, 1905.
(2) Zentralb. f. Gyn., No. 38, 1905.

still alive. The patient was seized with another convulsion immediately after the abdomen was opened. The child, though deeply asphyxiated, was resuscitated. The uterus was removed (Porro method) on account of atony. Contrary to all expectations the patient was alive and conscious the next morning. She had no further convulsions, and left the hospital with the baby four weeks after the operation.

Busalla reports a case in which a IV-para had heart trouble, and illustrates that by watching the fetal heart tones carefully the operation may be deferred until the woman is dead and still save the child. The dyspnea was very extreme and venesection was just to be made when the patient died, and the abdomen was opened with the same scalpel and a living child delivered. The heart tones had been observed very carefully and the section would have been made earlier had the condition of the child become serious. [The heart tones should always be carefully watched, but it is not wise to place entire confidence in the results of auscultation. The child may be in danger with good heart tones. The sign must be controlled by other conditions.—Ed.]

Anatomy of Pubiotomy. The topography and technic of the operation known as pubiotomy, hebotomy, or extramedian symphysiotomy, is described by Tandler.[1] The os pubis, which is severed, extends laterally to the sagittal diameter, passing through the anterior circumference of the obturator foramen. If the section is made through the pubic tubercle, in a vertical direction, it will never involve the foramen. The periosteum of the upper and lower borders is thick. The blood supply, anteriorly, is derived from branches of the obturator artery and posteriorly from the pubic branches of the obturator and inferior epigastric arteries. The arteries of both sides anastomose in a netlike manner, furnishing nutrition for the smaller segment of the ramus without fail in case of section of the pubes.

The anterior abdominal wall would be better preserved if the incision passes through the insertion of the rectus. The other muscles of importance which are involved and

(1) Zentralb. f. Gyn., No. 28, 1905.

attached to the mesial side of the pubic tubercle are the adductor longus, adductor brevis, and gracilis. Lower down the transversus perinei profundus and levator ani are included. When the os pubis is separated, the parts attached to the smaller segment in connection with the liga-

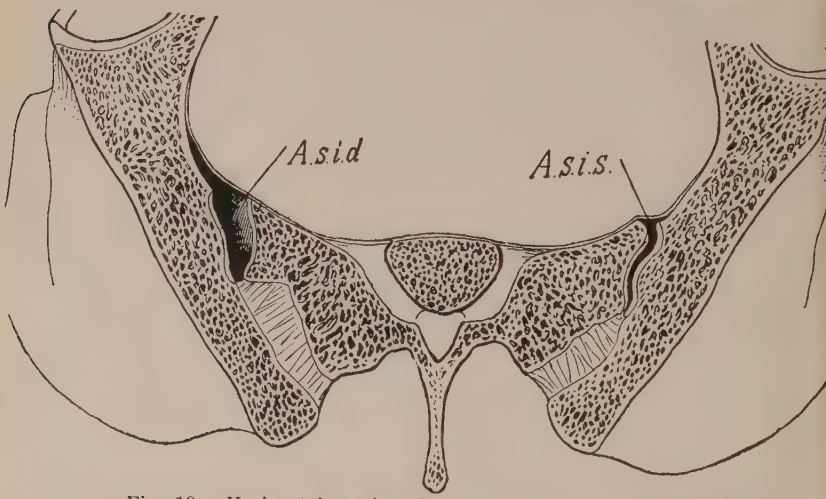

Fig. 19. Horizontal section through both sacro-iliac joints of a pelvis divided on the right side with a separation of 4 cm. between the cut ends of the bone.

mentum arcuatum and transversus remain intact, whereas the parts attached to the lateral segment, which also includes the posterior vaginal wall, is stretched and eventually torn when the ends are fully separated.

It would be well to determine how often tears of the vagina have been due to this operation. The urethra is not disturbed; a distinct advantage over symphysiotomy. The levator ani is separated in the longitudinal direction. The integrity of those fibers attached to the inner segment may be decidedly disturbed. Considerable injury may be done to the pelvic floor muscles, especially the anterior portions. The question of a future prolapse should be considered, since the integrity of the latter muscles is very essential to prevent the same.

In spite of contrary clinical statements, from an ana-

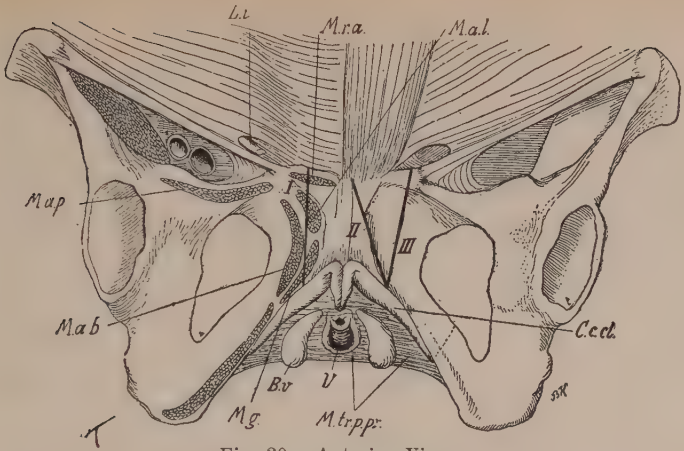

Fig. 20. Anterior View.

B. v. = Bulbus Vestibularis. C. c. cl. = Corpus cavernosum clitoridis. L. t. = Lig. teres. M. a. l. = M. adductor longus. M. a. b. = M. adductor brevis. M. a. p. = M. adductor pectineus. M. g. = M. gracilis. M. r. a. = M. rectus abdominis. M. tr. p. pr. = M. transversus perinei profundus. V. = Vagina. I, Sagittal Lateral Incision. II, Gigli Incision. III, Van de Velde Incision.

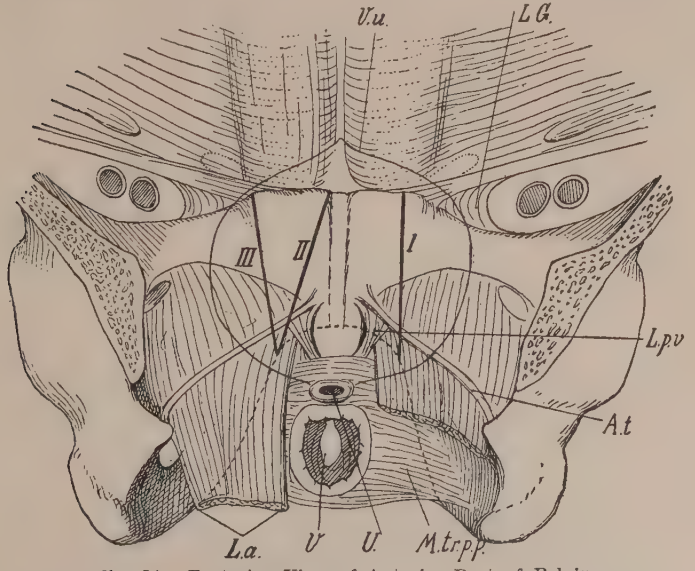

Fig. 21. Posterior View of Anterior Part of Pelvis.

A. t. = Arcus tendineus. L. a. = Levator ani. L. G. = Lig. Gimbernati. L. p. v. = Lig. pubovesicale. M. tr. p. p. = M. transversus perinei profundus. U. = Urethra. V. = Vagina. V. u., Contour of Bladder. I, Sagittal Lateral Incision. II, Gigli Incision. III, Van de Velde Incision.

tomical standpoint, the corpus cavernosum cannot be avoided in the operation unless previously separated or dissected from the ramus. They are covered superficially by the ischiocavernosus muscles, and at the base are intimately attached to the periosteum and cannot be readily dissected from it. The clitoris artery crosses the field of operation diagonally, but causes little hemorrhage on account of its small caliber.

Posteriorly, the following parts may be involved: The bladder, vagina, pubovesical ligament, and a venous plexus. The bladder and vagina are easily avoided and the ligaments remain intact, preserving the normal position of the bladder, a point upon which Gigli lays great stress. The arcus tendineus is, of course, separated.

Tandler secured the following measurements on 2 pelves in which the right ramus was severed:

I

	Before separation.	Separation of 2 cm.
Conjugata vera	11.1 cm.	11.5 cm.
Transverse diameter	14. cm.	14.8 cm.
Right oblique diameter	13.9 cm.	14.5 cm.
Left oblique diameter	13.9 cm.	14.7 cm.

II

	Before separation.	Separation of 2 cm.	Separation of 4 cm.
Conjugata vera	9.5 cm.	10. cm.	10.2 cm.
Transverse diameter	13.7 cm.	14.5 cm.	15.3 cm.
Right oblique diameter	13. cm.	13.5 cm.	13.6 cm.
Left oblique diameter	12.6 cm.	13.4 cm.	14.4 cm.

The conjugata vera was increased 5 mm. by separation of 2 cm. and only 7 mm. by double the separation. That the enlargement is not symmetric is evidenced by the greater gain of one oblique diameter.

Fig. No. 19 shows the condition of the sacroiliac joints. It represents a vertical section at the level of the lower border of the first sacral vertebra with the pubis separated but 2 cm. There is distinct gaping on the right side, but

none on the left. The anterior sacroiliac ligaments are stretched but intact. By a separation of 4 cm. the left joint shows the same amount of gaping as the right did before. The right gapes considerably, and the ligaments are partly separated with the periosteum from their attachment in the vicinity. Tandler grants though that the mechanism and results in the living may be somewhat different.

The configuration is quite different from that in symphysiotomy, which is symmetric. He questions the statement of Van de Velde that the head passes through easier when the section is made on the side the anterior parietal eminence is in.

The hemorrhage of symphysiotomy is due to the tearing of the corpus cavernosum, the dorsal vein of the clitoris, and the pudendal plexus. The separation causes stretching of the pubovesical ligaments and stretching of the bladder in the transverse direction, and eventually it or the ligaments must tear. The joint can be separated only after the ligamentum arcuatum, ligamentum transversum and the transversus perinei profundus muscles are torn, and through this injury the bladder and urethra are especially affected and easily torn during the passage of the head. These structures, as well as the pudendal plexus and the pubovesical ligaments are preserved in pubiotomy.

The operation may be open or subcutaneous. By the open method Gigli operates from within above to without below, as shown in Fig. 21. Van de Velde operates in the reverse manner. Others make the vertical incision. Of those operating by the open method, Van de Velde is the one who injures the musculature the least. Some saw from below upward and others from above downward. Doederlein, in the subcutaneous method, begins above, though it is indifferent where one begins by his method.

Tandler suggests operating in the following manner: Make an incision in the skin to the side of the labium majus, parallel with the ramus about 3 cm. long, beginning about 1½ cm. from the lower border of the symphysis. The subcutaneous fat is now to be separated in the direction of the free border of the pubes to expose the latter. The corpus cavernosum is now to be sought. It and the

periosteum are then separated from the bone and pushed downward and inward. These bodies are then ligated by passing ligatures from without in and cut between. The periosteum of the inner surface is then lifted off and pushed up. The needle is then passed up next to the bone until it is at the mesial side of the pubic tubercle, and pierces the rectus abdominalis. A counter incision is then made over the point of the needle and the saw pulled through. The pubis is to be separated vertically. It is practically imposible to injure the bladder by this method, because the needle remains close to the bone.

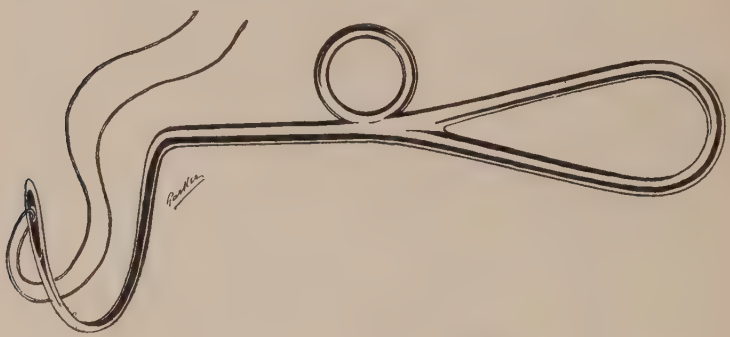

Fig. 22. Dr. De Lee's Needle.

Most writers attribute the source of hemorrhage to the ends of the bone and think that the corpus cavernosum remains intact. Tandler maintains that it is from the soft parts.

The important features of this method are the dissection and ligation of the corpus cavernosum and the subperiosteal passage of the needle from below. It requires more time, however. [The needle referred to is a large Deschamps pedicle needle with a slightly sharper point and a strong handle. Being unable to obtain in this country the needle used abroad, the writer, after experimenting on the cadaver designed the needle illustrated in Fig. 22. It is passed, practically subcutaneously, around the joint,

threaded with a ligature which carries the Gigli wire saw on its return.—Ed.]

In order to determine the exact anatomic changes in the pelvis after symphysiotomy and pubiotomy, Sellheim[1] experimented on the cadavers of women well advanced in pregnancy or early in the puerperium. At first he performed symphysiotomy, then made casts of the pelvis at different stages of the enlargement to determine the mechanism. The bones were then carefully sutured with silver wire to restore the pelvis as nearly as possible to its former shape, after which he performed pubiotomy by the Doederlein method. This order was reversed on alternate cadavers.

Where the amount of spreading was the same, the degree of enlargement was alike in both operations. The increase in space toward both sides was proportionately the same, whether the pelvis was separated in the median line or 1-2 cm. to either side, but a greater degree of force is necessary to get the same enlargement by pubiotomy.

As a result of the peculiar mechanism of rotation of the pelvic bones after separation, there occurs a marked convergence at the outlet, forming a funnel-shaped pelvis. This is due to the connection of the pelvic bones by the muscles of the pelvic floor and the ligaments, which also prevent irreparable injury. [This narrowing of the outlet may be avoided by putting the patient in the lithotomy position while the head is passing the bony outlet. Special care is required under these circumstances to prevent laceration of the soft parts of the pelvic floor.—Ed.]

Sellheim reports a case in which the pubiotomy was performed by the Doederlein method. Spontaneous delivery was awaited after external manipulation to aid internal rotation. There were no lacerations and the pelvis remained permanently enlarged. The only complication was the formation of a hematoma, which eventually absorbed without any rise of temperature intervening. This is a common complication of the subcutaneous method and makes it essential that the asepsis be carried out to the extreme.

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(1) Transactions German Gynecologic Congress, Kiel, 1905.

He says the absence of internal rotation is caused first by the flattening of the angle of the pelvic canal through the approach of the pelvic floor to the anterior wall, and the spreading of the symphysis, and secondly, by the stretching of the soft parts of the pelvic floor, which shortens the diameter from above downward.

Seeligmann[1] has devised a *needle for the introduction of the Gigli saw* in pubiotomy, for which he claims greater exactness in the application of the saw, less hemorrhage, and small wounds. The needle is hollow, but the concave surface is exposed, permitting the saw to be used with the needle in place and protecting the soft parts from injury.

Seeligmann makes an incision, about 2 cm. long, on the upper border of the pubis, about two or three finger breadths from the middle of the symphysis. He also makes one on the lower border of the ramus, just without the large labium. The hemorrhage is slight and easily controlled by the tampon. The index finger of one hand is then passed through the lower opening to the posterior surface of the bone, and serves as a guide for the needle, which is introduced through the upper opening, with the saw in place, and passed as closely to the bone as possible. After the needle has been passed through a handle is attached to the lower end of the saw and the bone cut by a number of tractions (20 to 30).

The patient operated on was a II-para, with a generally contracted, flat, rachitic pelvis and a conjugata vera of 7.5 cm. The operation was successful and the woman walked without difficulty on the eighteenth day. The child weighed 10 pounds. The largest circumference of the head was 38 cm.

Walcher[2] reports a case of *pubiotomy* performed by the Doederlein method, which terminated successfully in every respect. He uses the needle as illustrated for applying the Gigli saw. The perforation is made from below upward, a counter incision being preferably made above if a very small opening is desired.

He also applied the saw as a prophylactic measure in another case, but the head slipped into the pelvis after the patient was put in the Walcher position. The puerperium

(1) Zentralb. f. Gyn., No. 40, 1905.
(2) Zentralb. f. Gyn., No. 36, 1905.

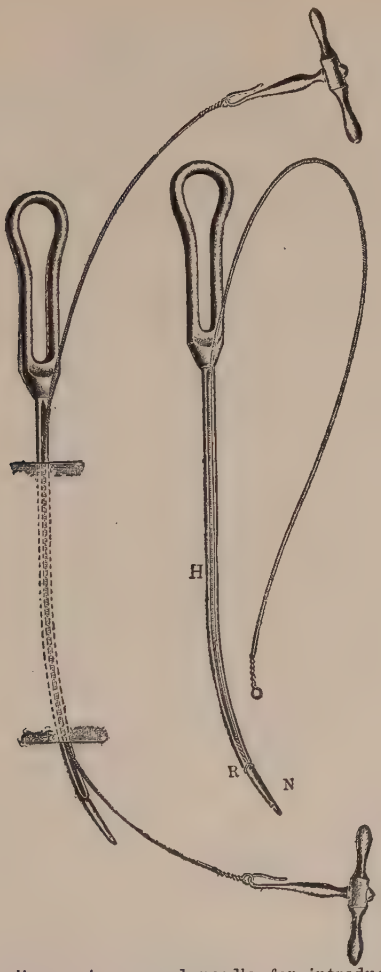

Fig. 23. Dr. Seeligmann's grooved needle for introducing the Gigli saw directly.

was perfectly normal and all signs of the operation had disappeared in three weeks.

Sitzenfrey[1] contributes 3 more cases of *pubiotomy* or

(1) Prager med. Woch., No. 23, 1905.

extramedian symphysiotomy performed according to the Gigli method, to the 4 previously reported by von Franqué, making a total of 7 in the latter's clinic.

Two of the pelves were flat rachitic with a conjugata vera of 8 and 8¼ cm., respectively. The third was an asymmetric, generally contracted pelvis with a true conjugata of 8 cm. Complete dilatation of the os was always obtained by the use of the metreurynter. The subcutaneous method recommended by Doederlein was used in each

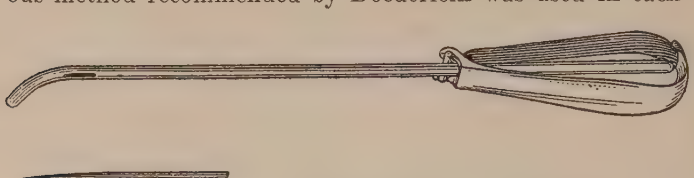

Fig. 24. Walcher's protected needle for pubiotomy.

case. The amount of hemorrhage was slight. The ends of the bone were separated three finger breadths. When it was possible the head was pressed into the pelvis before the forceps were applied.

In one case the vaginal vault tore into the pubiotomy wound. This was drained and the result proved most satisfactory. In another case the patient already had a temperature of 102.4 when operation was begun. After delivery it dropped to normal and remained so. There were no bladder complications and all the puerperæ were able to leave the bed at the end of 21 days.

The after treatment consisted in the application of a pelvic band and perfect cleanliness. All the babies survived.

The Gigli saw was placed in position in 2 other cases with aftercoming head as a prophylactic measure. The simplicity of the operation recommends the above procedure, though it should be done before attempts to deliver the head have been made.

Two cases of *pubiotomy* performed in the Schauta clinic are reported by Bürger.[1] The patients were both multiparæ and had generally contracted, flat rachitic pelves. The babies were both large (3,450 and 4,000 gms.). On ac-

(1) Zentralb. f. Gyn., No. 27, 1905.

count of the high position of the contraction ring version was contraindicated, and pubiotomy was performed by the subcutaneous (Doederlein) method.

The one case was a right oblique anterior position and the pelvis was divided on that side. The other was a left oblique posterior and the incision was made on the left side. It required 25 and 30 to and fro motions, respectively, to sever the bone. In one case there was considerable hemorrhage, but it was easily controlled by pressure. The extraction was completed with the high forceps. A small rubber drain was introduced in both cases. Recovery was perfect and there was a permanent separation of about one finger's breadth.

He emphasizes the importance of making the lower counter opening as far from the vulva as possible, to avoid contact with the lochia. He thinks this operation should frequently take preference over Cesarean section, prophylactic version and perforation of the living child.

V. Küttner[1] narrates 2 cases of *pubiotomy,* the first to be performed in Russia. The first patient was a V-para, who had had two spontaneous deliveries. The first child is alive and well. The fourth labor was complicated by puerperal fever. The pelvis was a generally contracted, flat rachitic, 24, 25, 29.5, 16.5, and conjugata vera 7.5-8 cm. The membranes were ruptured artificially when the dilatation was complete, and the expectant course then followed. At the end of 18 hours of good pains, the contraction ring had gone up and pubiotomy was decided upon. The high forceps were first applied and attempt made to deliver, but unsuccessfully. The operation was performed by the method recommended by Van de Velde in 25 minutes. The child was delivered with the forceps. There was some difficulty in getting the bones in apposition. Hemorrhage was not severe. A gauze drain was inserted in the wound. At the end of 26 days the patient left the bed with a perfect result.

The second patient was a III-para and had a flat rachitic pelvis, with a true conjugata of 7.5-8 cm. The head presented by the anterior parietal bone in the first position. Owing to threatened rupture, the high forceps

(1) Zentralb. f. Gyn., No. 27, 1905.

were applied, but without success. Pubiotomy was performed as in the first case and the child easily delivered with forceps. The soft parts were united by silk, which included the periosteum. The sutures were removed on the seventh day, and the ends of the bones again separated, creating a cavity which became infected, and did not close until the fiftieth day. On the nineteenth day her temperature was a trifle over 104. She was not discharged until the sixty-sixth day. The union was finally satisfactory. The puerperium was also complicated by a pelvic thrombosis of the right side, which he attributes to the lochiometra, and not to the infected operation wound, which was on the left side. The writer thinks the infection of the wound would have been avoided had he performed the operation by the subcutaneous method.

Sellheim[1] reports a case in which *an abnormally large head* was the indication for pubiotomy in a VII-para of 38, whose former labors had been spontaneous. The pelvis was flat rachitic, with a conjugata diagonal of 10.5 cm. The presentation was an anterior parietal bone. Labor had been in progress 12 hours and the membranes had ruptured 4 hours before. The head was not engaged or fixed. During the preparation for the intended pubiotomy the uterus ruptured and laparotomy had to be performed. The anterior wall was torn through. There was a beginning rupture 3 cm. long on the posterior wall. The uterus was extirpated; the bladder was uninjured. The child was a male, 57 cm. long, weighing 3,740 gms. The occipitofrontal circumference was 36 cm. There was a depression in the posterior parietal bone.

The first seven children were by the first husband, whose head was small and who wore a No. 54 hat. The father of this child wore a No. 60 hat. This case emphasizes the importance of considering the proportion between the head and the pelvis, and not merely the figures representing the conjugata vera or diagonalis. [The Editor in another place has emphasized this necessity.—Ed.]

Sellheim[2] also contributes three cases of *subcutaneous hebotomy* (pubiotomy). They were performed according

(1) Zentralb. f. Gyn., No. 35, 1905.
(2) Zentralb. f. Gyn., No. 36, 1905.

to the Doederlein technic. All were complicated by the formation of large hematomata. Resolution, though slow, was uneventful, excepting in the third case. The patient was a IX-para, and had a flat rachitic pelvis, with a conjugata vera of 7.75 cm. Labor had been in progress 37 hours and the head was still at the inlet in spite of severe pains. The temperature was slightly elevated and the fetal heart tones were between 170 and 180, consequently pubiotomy was performed on the left side, the head pressed into the pelvis by the Hofmeier method, and extracted with the low forceps. The hematoma reached the size of the fist within a few hours after the operation. On the fifth day the temperature rose to 101.3°, and did not fall to normal until the eleventh day. On the eighth day the hematoma suddenly became smaller and was supposed to have ruptured into the vagina or externally, but, on the contrary, a swelling the size of a small fist was found on the posterior surface of the left thigh, between the upper and middle thirds. This disappeared on the thirteenth day and the following day the patient left the bed. Her gait was not disturbed. The ends of the bones were one finger's breadth apart. A thrombosis of the left femoral vein was discovered on the twentieth day, which necessitated her return to bed for some time.

Sellheim advises the exercise of considerable care in sawing the pubic bone, but warns against being too careful to prevent excessive hemorrhage, because the bone may not be severed completely at a time when it is supposed that it is. The sawing is to be continued until there is not only the sensation of the bones being severed, but until there is considerable freedom in the soft parts. It is advisable, before removing the saw, to ascertain positively that the pelvic ring is easily enlarged.

Though the formation of hematomata with the subcutaneous method is a formidable complication, the operation is nevertheless not to be discarded for symphysiotomy.

Reeb[1] reports four cases of *subcutaneous pubiotomy* and one of prophylactic application of the Gigli saw. The patients were all multiparæ and had borne 14 children in all, of which 10 either died during labor or were perforated. The conjugata vera ranged from 6.75 to 8.25 cm.

(1) Münch. med. Woch., No. 48, 1905.

They had all been examined frequently during labor and one case had fever. The presentation was a brow once, occipitoposterior twice, breech and shoulder each once. The child was always delivered immediately after the pubiotomy by an assistant, who did not touch the operative wound. Hemorrhage was always controlled by compression. The upper wound was drained with iodoform gauze. No prophylactic bandage was applied, but a dressing of adhesive plaster was applied afterward. The children all survived. Four of the women were out of bed on the twentieth day. The highest temperature was 101°. The results were all that could be desired. In one case, though, the needle was passed without the finger as a guide, and the bladder was perforated. The fistula persisted only 23 days, however.

Van Cauvenberghe[1] prefers the term *pubiotomy* to *hebotomy* for lateral section of the pubis. He gives the results of experiments on 17 cadavers. The subjects were of various ages, from 21 to 74, and the dilatation was carried to the extent of breaking one or the other sacroiliac joint. Measurements of 10 diameters are given in a series of tables.

He found that the increase in size generally was greater on that side on which the section was made. There was no great advantage, in gain of space, by dividing the pubis on both sides. A separation of 3 cm. in the pubis gave an increase of 1 cm. in the conjugata, 1.4 cm. in the transverse, and about 1.3 cm. in both oblique diameters. Separation of more than 4 cm. is liable to damage the capsule of the sacroiliac joint. As enlargement is greater on the divided side, it is preferable to operate on the side in which the occiput lies. The bladder and urethra are less likely to be injured in this operation than in symphysiotomy.

Two cases of *pubiotomy* are reported by Bauereisen.[2] In one case the measurements were 26, 28, 18, 10.5, 8.5 (Skutch), a generally contracted, flat rachitic pelvis. The position of the child was right scapular anterior. Operation was refused by the patient until the question of perforating the living child was presented.

(1) L'Obstetrique, January, 1905.
(2) Münch. med. Woch., Nos. 51 and 52, 1905.

The operation was performed by Doederlein's subcutaneous method. There was no appreciable hemorrhage at first, but finally there was considerable, which was checked by a tampon of gauze drawn through the lower opening. The position now was left oblique posterior. The bag of waters had ruptured 24 hours before. The patient was returned to bed, and delivery awaited, which occurred spontaneously 3 hours later. The wounds were closed immediately as far as possible. The tampon was removed the next day, but was followed by more hemorrhage, so it was renewed, and not removed until the fifth day, when all was well. No bandage was applied to the pelvis, the patient was up on the eighteenth day and discharged on the twenty-third. The union was membranous and pressure elicited no pain. The conjugata vera was 10, a gain of 1.5 cm.

The second case was a primipara of 35, with a kyphoscoliosis. The measurements were 26.5, 28, 17.5, 9.5, 7.5, an obliquely contracted, flat rachitic pelvis. The membranes had ruptured 11 days before labor began. The position was left posterior parietal. The pubiotomy was readily performed (Doederlein), with no hemorrhage to speak of. The forceps were applied 30 hours later on account of a deep transverse arrest of the head and a living child delivered. Episiotomy was necessary, but a complete tear resulted nevertheless. The puerperium was complicated by a sudden rise in temperature, due to separation of the perineal wound, and a slight thrombosis of the left femoral vein. The patient was up on the twenty-seventh day and discharged on the thirty-third. Union was membranous and very satisfactory. The conjugata vera was increased to 9 cm.

The hemorrhage originates in the soft and not the bony parts, especially the corpus cavernosum, bulbus vestibulæ, vesical plexus, veins of the urogenital diaphragm, and possibly the pubic branch of the inferior epigastric and obturator arteries. He discusses three incisions, those of Gigli, Van der Velde and Tandler. A hematoma of the vulva may be the cause of a thrombosis on account of the pressure exerted. The operation is one of preparation. The danger of tearing the vagina is greater if the delivery is instrumental, because the transversus perinei profundus

is apt to be severed, which may eventually be the cause of a vaginal prolapse. The lowest limit for the operation is a conjugata vera of 6¾. It may also be performed when a Cesarean section is contraindicated on account of infection.

The advantage of letting the woman deliver herself after the operation has been performed, if it is possible, is that lacerations of the bladder and vaginal and perineal tissues are not so likely to occur because of the more natural method. The women do not suffer any more, nor even as much on account of the expectant treatment The object of the after treatment, no bandages, supports, etc., is to prevent too early union in order to permanently increase the size of the pelvis.

The operation of *pubiotomy, or hebotomy, or extramedian symphysiotomy* received scant notice in the last Year Book because it was too new for extensive discussion. During the past 12 months, however, a great many cases have been published and the Editor thought fit to present a goodly number here for the criticism of our readers.

As usual with new operations, extravagant claims are presented at first, and pubiotomy is no exception to the rule. With every discount, the operation still shows a good balance, and while it is probable that many cases reported are due to over zeal to try the new procedure, and therefore present good results, the Editor feels that the operation has won a foothold among recognized obstetric maneuvers. The older symphysiotomy severed the joint through the cartilage. The new extramedian symphysiotomy saws the bone about ¾ of an inch alongside the point. A curved needle is carried around the joint, and by its aid the Gigli saw, invented, by the way, for this operation, is carried around the pubic bone. By a few sawing movements the bone is cut through and the pelvis allowed to gape. Some operators hold the sides of the pelvis together, others apply a rubber constrictor, others use nothing.

Some operators pass the needle after a long skin incision exposing the joint, others incise the skin slightly above and below the pubis, others only above or only below, letting the needle emerge from a tiny perforation; others make the operation completely subcutaneous.

Some operators prefer to leave the delivery to nature, but most accoucheurs terminate the labor at the same sitting. The method of delivery also varies, some using the forceps, some version followed by breech extraction.

The Editor has not yet had occasion to perform the new operation, but during the symphysiotomy craze, he did the latter operation twice. Although the results were perfect for both mother and child, the Editor did not become enthusiastic for the procedure, and since has substituted Cesarean section and with great success.

From experiments on the cadaver, from the above mentioned experience and from a careful consideration of the reported cases the Editor would perform the operation as follows: In the first place the indication must be a good one. There must be a real disproportion between the head and the pelvis, and the condition of the mother and babe must be excellent and dilatation complete. The choice of Cesarean section must still be considered in such cases. The parturient is prepared as for laparotomy, but is placed on the table in the lithotomy position. Doederlein's method is used. A small horizontal skin incision is made over the pubic tubercle. The finger is introduced behind the pubis to separate the bladder from the bone and push up the head. The needle, armed with a silk loop is carried around the bone, if possible under the periosteum, and brought out in the large labium. By pulling the labium inward the opening in the skin is made far from the introitus. This puts it out of reach of the lochia. On withdrawing the needle the saw is carried around the joint by the silk loop. Now the bone is severed by a few to and fro motions. The saw having cut through the bone, an examination is made to make sure that the ends have separated, then the saw is removed. Hemorrhage is controlled by pressure, which usually succeeds. In a few cases it was necessary to pass some deep sutures. Delivery is now accomplished, but first a deep episiotomy is made. This has the double purpose, first to prevent a complete laceration of the perineum, and second to prevent undue stretching and perhaps tearing of the anterior vaginal wall and base of the bladder. Though most accoucheurs seem to prefer version and extraction the Editor would use forceps if the head engaged

or could be pressed into the pelvis. Otherwise version is the operation of necessity. Extreme care must be observed not to allow the anterior vaginal wall to be torn. It is to avoid this that a few counsel leaving the delivery to nature. This seems rather cruel to the mother, who went on the table with the hope that she was to be relieved of her sufferings.

After the child and placenta are delivered all the tears are repaired. Then new sterile gloves are put on and the small pubiotomy wounds are attended to. A few adhesive straps will hold the pelvis sufficiently and the after care is the same as that of symphysiotomy.

The advantages claimed for the new method over the old are:

1. Less dangerous. Results better. There are too few cases as yet for final judgment.

2. A bony union more likely, at least, less danger of permanent inability to walk. This seems to be true.

3. Less danger of injury to urethra and bladder. True.

4. Equal enlargement of the pelvis. Not quite true.

5. Less injury to subpubic ligament and the triangular ligament and the structures passing through the latter. True.

6. Finally the operation has the same good points as symphysiotomy.

The dangers of the operation are; sepsis, which ought to be prevented; hematoma of the labium, not easily prevented though seldom serious; rupture of the sacroiliac joints; laceration of the base of the bladder and urethra; perforation of the bladder. These last may usually be avoided by proper care and slow delivery. Hemorrhage during the operation is usually not serious and is controlled with moderate difficulty. I learned recently of a case of pubiotomy where the patient died on the table from uncontrollable hemorrhage. This case has not yet appeared in the literature.

The mortality, it must be admitted, of reported cases is very low and let us hope it will continue so, since any operation that will reduce the frequency of craniotomy is to be welcomed fervently.]

Delivery and Separation of Xiphopagus. Jolly[1] reports a case in which delivery was performed by a midwife 7 hours before the patient was brought to the hospital. The mother was a IV-para, 31 years of age. Her former deliveries were normal. No history of abnormalities in the family. Twenty-four hours after the beginning of labor the head of the first child was born. Then the feet of the second presented and with the bodies of both in the same plane, delivery proceeded without difficulty. The second child was still born. It was 44 cm. long and the circumference of the head was 29 cm. The length of the other was 41 cm. The circumference of the head was the same —29 cm. Both were girls. They were loosely united at the sternum by a band of fibrous tissue, and the livers were united by a band of hepatic tissue 2 cm. in thickness and $\frac{3}{4}$ cm. in length. The remaining organs were distinctly separated. There was some communication between the peritoneal cavities, but during the operation that of the living child remained uninjured. The child died 43 hours after operation.

The umbilical vessels from the liver outward remained distinctly separate until they passed through a common navel into a single cord. The placenta was large and single. The cord contained 6 vessels, and divided into two close to the placental insertion.

The exact name of the monstrosity is xiphohepatopagus. A careful examination of the literature revealed the fact that delivery usually occurred without much difficulty. When one or both are alive a mutilating operation is rarely indicated. The separation of the two may as well be performed during infancy as later, though the general condition of either or both must be taken under careful consideration. The separation of a xiphopagus has now been undertaken 6 times, with a result of 2 children surviving, each in a different case. The operation is comparatively easy. Death of one is an absolute indication for division, since not a single one has survived the other when separation was not performed. The dangers of the operation are no greater than in a single laparotomy.

Delivery of Torn-off Head. Bensinger[2] describes a new

(1) Zeitsch. f. Geb. u. Gyn., Band. LV.
(2) Zentralb. f. Gyn., No. 35, 1905.

method. In one case the breech presented, and during the attempts at extraction by another physician, the head was torn off; 12 hours later, there having been no pains in the interim, the os admitted but one finger and the base of the head could barely be reached. He then grasped a cervical vertebra with a bullet forceps and attached a tape to it, which he carried over the foot of the bed and hung a weight of about 3 pounds to it. It was not until 24 hours later that it was possible to deliver the head only moderate traction was now needed. There had been no hemorrhage all this time and it became necessary to remove the placenta manually.

In the second case attempts at extraction had resulted in the fracture of the lower jaw and finally in the separation of the head from the trunk. All attempts at engaging the head failed, so the forceps were applied to the head as in the other case and traction made. One and a half hours later it was delivered quite easily, though it had turned and presented with the occiput. The puerperium was normal in both cases. The writer claims for this method simplicity, harmlessness, and no discomfort to the patient.

Rühl[1] would not recommend the procedure described by Bensinger in all cases, because too much time is consumed and infection is invited through delay. Furthermore, very severe hemorrhages occur from the separation of the placenta, and if it is already separated, the insufficient contraction would favor entrance of bacteria into the open sinuses. He recommends perforation and cranioclasis in all difficult cases, but it is absolutely essential that the head be fixed from the outside during the manipulation. He usually perforates through the mouth or orbit and applies the outer blade of the cranioclast to the face. He reports 4 cases in which he removed the head by traction with the fingers in the mouth and pressure from without, perforation through mouth, and cranioclasis, vaginal section and perforation through the orbit and through the large fontanel and cranioclasis, respectively.

[The Editor in one such case fixed the head by means of the forceps and then perforated. It was otherwise impossible to hold the loose head firmly enough to pass the

(1) Zentralb. f. Gyn., No. 46, 1905.

perforator. In another case in which the head remained attached to the trunk by a slender bridge of skin, the Editor held the head sufficiently firmly by traction on the jaw. Rühl is right not to allow so much time for the delivery of the head. Nothing is gained by waiting, much may be lost, while by completing the delivery ordinary skill should prevent injury and everything is gained.]

Manual Removal of the Placenta. Mayer[1] contributes a report on 68 manual deliveries out of 2,964 labors. There was but 1 death (due to hemorrhage), the patient being moribund at time of removal, and but 1 case of temperature during the puerperium. In cases of severe anemia the writer gave an infusion before operating. The uterus was irrigated only when there was a fever present, and the tampon was introduced with the hand.

Vaginal Douches Post Partum. Schechner[2] has had occasion to see ill effects result almost immediately from vaginal douches given during the puerperium in 5 cases. Some days after delivery the women were given a vaginal douche, and this was soon followed by severe uterin cramps and a rise in temperature, which in 1 case resulted fatally. He cautions against permitting any one but a physician to give a douche when there is an indication for one, and then only under low pressure.

(1) Prager med. Woch., Nos. 20 and 21, 1905.
(2) Wien. klin. Ther. Woch., March 5, 1905.

PART III.

PUERPERIUM.

Nervous Affections During the Puerperium. Meyer[1] has observed a peculiar affection of the nerves of the lower extremities, involving the motor as well as the sensory fibers. A few days after labor (rarely later) the patient complains of pain and a heavy sensation in one or both legs. The same may appear a few hours after labor. The patient cannot raise the leg flexed at the knee (paralysis of the ileopsoas). The power to raise the leg when extended is diminished to a lesser extent (quadriceps). The adductors are the least involved. Characteristic painful points are noted over the crural nerve, just below Poupart's ligament; saphenous nerve at the internal condyle of the tibia; external cutaneous nerve at the anterior superior spine, and least of all, the obturator nerve in the vicinity of the obturator foramen.

This affection was observed in 32 cases out of 680 puerperæ. In about one-half the affection was bilateral, though often more pronounced on one side. The average duration was 7 days, the shortest 2 days, and the longest 13. A recurrence was observed twice. The affection is rarely burdensome, though the pains may be so severe as to disturb sleep. The pains generally disappear sooner than the painful points and the disturbance of motion. The etiology must rest on a basis of autointoxication, which localizes itself in the spinal centers. A peculiarity is that it does not manifest itself until after labor, though one case was observed in which the pains began to manifest themselves during pregnancy.

Recently Meyer has observed a similar condition of the upper extremity of a puerpera. The corresponding lower extremity was also slightly involved.

(1) Transactions German Gyn. Congress, Kiel, 1905.

Mammary Affections in Relation to Breast Nursing. Jeannin and Balerin[1] tabulated the cases observed in the Tarnier clinic during 1901-4. A total of 5,746 cases were delivered, of whom 590 (10.2 per cent) had some affection of the breasts. The greater number were observed in the spring (March to June). The condition was often associated with inflammation of the genitals.

Of those who nursed, 8 per cent had a lymphangitis, 4.2 per cent galactophoritis, 2.2 per cent had both, and .627 per cent developed an abscess.

Of those who had had but one attack of lymphangitis, 65.1 per cent continued to nurse, 22.4 per cent resorted to mixed feeding, and 2.7 per cent were compelled to give up nursing.

Of those who had had several attacks, 32.1 per cent continued to nurse, 25 per cent resorted to mixed feeding, and 35 per cent found it impossible to continue.

Of those with galactophoritis the nursing was continued alone in 42.9 per cent, mixed in 25.8 per cent, and discontinued in 14.8 per cent.

Of those with lymphangitis and galactophoritis the nursing was continued alone in 42.5 per cent, mixed in 21.8 per cent, and discontinued in 25.2 per cent.

Of the cases developing an abscess nursing was continued in 18.9 per cent, mixed in 20.1 per cent, and impossible in 32.3 per cent.

[The Editor seldom allows a woman who has had an abscess to nurse the infant. Although in some cases harm has apparently not resulted, it is considered too hazardous for the baby and nursing keeps up the irritation in the suppurating breast and increases the flow of milk from it. The drain of the pus and the nursing together are too much for most patients already worn with fever and pain.]

Time Menstruation Appears After Labor. It is universally believed the majority of women do not menstruate until after they have ceased nursing, or during the latter part of the period of lactation. Essen Möller[2] interrogated 428 women to determine the average time. He found that menstruation occurred during lactation in 60 per cent of the cases, which corresponds to the results obtained (58.7

(1) L'Obstetrique, July, 1905.
(2) Zentralb. f. Gyn., No. 6, 1906.

per cent) by Meyer, 1873. It must therefore be considered a normal condition at such time. In 38.1 per cent (over one-third) it appeared within the first two months and appeared with diminished frequency as months passed on. Thirty-two and three-tenths per cent did not menstruate while nursing. A preponderance of primiparæ did not exist.

Puerperal Infection. J. H. Burtenshaw[1] gives a chronologic review of the doctrines of the etiology and methods of treatment of puerperal infection.

Hippocrates' teachings were for many centuries the foundation of obstetric science. He taught the fever of the puerperium was due to suppression of the lochia and that free catharsis was necessary to rid the body of the noxious element. Galen (A. D. 200) reaffirmed the teachings of Hippocrates. Aetius (A. D. 500) and Avicenna (A. D. 1000) followed the teachings of the great master.

In 1570 Mercatus was the first to declare that fever was due to the lochia retained in the uterus becoming putrid. He was followed in 1668 by Raymond Fort, and in 1690 by Hervé, who taught the same theory, but later Mercatus held that the fever was due to inflammation of the womb caused by difficult labor. In 1575 Ambroise Paré attributed it to a "cold of the uterus."

Felix Plater in 1656 declined to accept the previous theories and asserted that fever was due to the retained fetus or secundines or the inflammation that had begun before their expulsion. In 1640 Riverius reiterated the theory of suppression of the lochia.

In 1662 Thomas Willis believed the fever due to a depraved condition of the blood after the long menstrual suppression of pregnancy, or "some evil affection of the uterus after childbirth." It was he who first used the term *"febris puerperarum."* In 1667 Sylvius taught the theory of "suppression of the lochia," as did Mauriceau in 1668. Sydenham seems to have believed that arising too soon after childbirth caused suppression of the lochia, and other symtoms which rapidly proved fatal.

Milk metastasis as a cause of puerperal fever is first mentioned by Sennert in 1631 and elaborated by Puzos in

(1) New York-Philadelphia Med. Jour., July 2, 1905.

1686. Others who accepted and taught this theory were Boerhaave (1708), Jussien Col de Villars and Fontaine (1746).

In 1742 Mead taught that it was due to inflammation of the omentum and intestines, and this theory was followed many years—or until the germ theory relegated it to the background.

Germ Theory.—Mercatus in 1570 was the first to suggest putrefaction as a cause, and not until 1866 was this theory given much credence, when Pasteur and Chevreul proved that putrefaction takes place only in the presence of germs from without, and even they met a storm of opposition. In 1872 Klebs published a treatise on Septicemia and Pyemia, and Billroth strongly opposed the theory, maintaining that "fungi" were ever present and developed when putrefaction had afforded them a feeding ground.

In 1864 Rokitansky reported the discovery of germs in the vaginal discharge of women suffering from puerperal fever, which produced abscesses when injected into the bodies of animals. In 1865 Meyerhofer reported Streptococcus pyogenes in the lochia of several women dead of puerperal fever. This investigation was continued by Pasteur and Doléris, the latter demonstrating the *S. Pyogenes to be nearly always the cause of puerperal fever.*

Epidemics.—The first one recorded was in 1652, and again in 1655. The mortality was 90 per cent. At the Hotel Dieu in 1746 every woman attacked during one month died. Epidemics occurred in all the large hospitals, but not outside them.

The contagiousness of the disease was recognized as far back as 1781. O. W. Holmes in 1843 and Semmelweis positively demonstrated that the contagion was communicated from one patient to another, or by the physician handling cadavers, before seeing the patient, and Semmelweis noted that washing the hands in chlorid of lime lessened the danger of communicating the contagion.

[Semmelweiss in 1846-47 proved that puerperal fever was nothing more nor less than wound infection and was caused by the physician or midwife bringing articles infected with "decomposing animal matter" in contact with the parturient or the puerpera. He saw most clearly the real cause of puerperal infection and kindred surgical in-

fections and pointed out in unmistakable terms the methods of prevention.—Ed.]

It has always been recognized that the infection occurs more frequently in primiparæ than multiparæ. The mortality at various times and in various hospitals has ranged from 2 to 18.43 per cent. Since the discovery of asepsis and antisepsis the mortality has decreased to 0.18 per cent or less.

An attempt to divide the various forms of puerperal infection bacteriologically has not been successful thus far, but in sapremia the symptoms are due to absorption of the toxins only, while in septicemia the germs invade the tissues. In putrid endometritis there is a thick layer of necrotic germ-laden material lining the uterus—under this is a thick layer of small cell infiltration—then normal tissue. While in septic endometritis the necrotic layer is thinner, the layer of small-cell infiltration is thin or lacking, and the germs have invaded the lymphatics and uterin tissue. The blood in the majority of cases is sterile, but when pyogenic cocci are found it is a grave sign. Leucocytosis is always a favorable sign though inconstant. Leucopenia is a fatal sign when constant. The iodin test is useful, leucocytes of normal blood being stained yellow; in all septic conditions they are stained brown

Treatment.—Among ancient customs were purgation, herb teas, sneezing, holding the breath, phlebotomy.

Sylvius prescribed medicines "to promote sweat" and opposed blood letting. In 1655 quinquinia became popular in connection with evacuants and cooling drinks and liquid diet and enemata. Hulme (1772) gave small doses of ipecac with opium, chamomile tea and antiseptic laxatives, and ordered frequent changes of linen and no bandages. Collingwood advised intrauterin injections, with magnesium sulphate internally. Calomel came into use later.

In 1888 Braun gave 1:1000 thymol intrauterine injection, followed by curettage, and after another irrigation 5 gr. iodoform was kept in the uterus by iodoform gauze, which also packed the vagina. This was removed in 24 hours and a daily douche given. Antistreptococcic serum was introduced in 1895.

Intravenous injections of formalin for the cure of sepsis

were introduced in 1903 by Barrows of New York, but have not proved successful in other cases.

Hysterectomy is advised by Leopold when the infection is limited to the uterus. If the infection has spread, the foci of infection must be sought and extirpated. Collargolum and unguentum Credé have many advocates at present. Normal salt solution is of great value alone or combined with other measures.

Uterin irrigation has but few adherents at present. The introduction into the uterus of suppositories containing 10 to 20 grains of iodin has been successful. Iodoform gauze packing after curettement in mild, and supplemented by posterior colpotomy and iodoform gauze drainage of the pelvis in severe cases is recommended by Pryor. Sharp curettes should not be used; only dull ones or the finger.

Treatment of To-day.—J. C. Webster washes out the vagina with 50 per cent peroxid of hydrogen and packs with formalin gauze, 30 gr. to the pint; does not pack the uterus, but irrigates with saline solution.

J. W. Williams brushes abrasions with pure carbolic acid or tincture of iodin; finger curettage if necessary. If there is streptococcic infection, or if the infection has extended beyond the uterus, local treatment is useless. The introduction of iodin suppositories into the uterus is common. Normal salt infusions are excellent. Ergot and strychnia, quinin and whiskey internally. Nourishing, easily digested food. Evacuation of pus cavities wherever found is always necessary.

Blood-Agar in Obstetric Practice. The use of blood-agar as a culture material is highly recommended by Fabre and Amstad.[1] The S. pyogenes is easily distinguished. There is a white zone around the colonies, due to the absorption of hemoglobin.

The S. gracilis which plays no rôle in the production of puerperal fever is easily differentiated, its colonies being small and dark or slightly green.

The colon bacillus, the gonococcus, and the pneumococcus may also be readily differentiated. The differential diagnosis between typhoid and puerperal fever may easily be made, and furthermore this method is more accurate

(1) Lyon Médical, April 16, 1905.

and oftener correct than the Widal. According to Lenhartz, in 95 per cent. The colonies develop in 36 hours, appearing as dark points in the deeper portions and a slight gray on the surface. Both blood and lochia of the patient should be examined, since one or the other may give negative findings. The method is also recommended for its simplicity.

The Stre tococcus Pyogenes in the Normal Puerperium. Schenk and Scheib[1] again contribute a study of the significance and importance of the S. pyogenes in the bacteriology of the uterin lochia of normal puerperæ. It embraces the examination of the lochia of 24 primiparæ and 41 multiparæ, both early and late in the puerperium. In the former the examination proved negative in the early cases 12 times, though the streptococcus was found only 2 times and the staphylococcus 4 times.

In the multiparæ the findings were negative in 30 cases, though the streptococcus was found but once. Of the 35 multiparæ examined late in the puerperium, 25 harbored bacteria, the streptococci being found in 13.

The conclusions drawn by the writers are that streptococci may be found in the uteri of over one-third of the normal puerperæ from the 7th to the 9th day. Some were of the S. brevis and some of the S. longus variety, and in most of the cases presented the same characteristic—morphologic staining and culture qualities of the pathogenic varieties of streptococci recently so fully described by Lingelsheim.

These streptococci are both aerobic and anaerobic, though under the latter conditions they do not thrive so well and their virulence is considerably inhibited.

Many of them are very virulent in mice. The serum derived from guinea pigs, immunized with these varieties, agglutinates, even when highly diluted, the virulent streptococci grown directly from stricken human beings.

Results of Infection of Ovum for Mother and Child. To determine the effect upon mother and child after infection of the ovum, Hellendall[2] conducted clinical and bacteriologic examinations of 74 protracted abortions. It was found that in no case did the uterus remain sterile.

(1) Zeitsch. f. Geb. u. Gyn., Band. LVI. H. 2.
(2) Zentralblatt f. Gyn., No. 27, 1905.

In 62 of the cases which had been examined, the presence of bacteria was attributed to contact infection. In the remaining cases which were not touched, the infection must have been an ascending one, probably along the surface of clots that hung into the vagina from the cervix.

There was temperature in 20 cases, though in the remainder the germs were pathogenic. The prognosis in the cases with temperature is usually good in the protracted cases.

Extension of the bacteria may be either through the membranes into the fetal sac or after rupture of the membranes through the amnion into the intervillous spaces, or through the amniotic fluid into the fetus. In 13 cases of infection of the fetus it occurred either through swallowing of the liquor amnii, premature intrauterine respiration, or spontaneous entrance of bacteria into the mouth, nose, rectum, or umbilicus.

The infected fetus may either die intrauterin or after delivery (bacterial aspiration pneumonia or general sepsis). The intrauterin infected living fetus may infect the placenta, inasmuch as the capillaries of the chorionic villi may become occluded through emboli from bacterial thrombi, in the vessels of the cord.

[This is a most important article, as it has many practical bearings. It shows the danger of too much procrastination in protracted abortions, also the importance of cleansing the uterus after abortions. It also explains some of the numerous deaths of infants in the first days after delivery.—Ed.]

Hemolysin Production of Pathologic Staphylococci. Lohr[1] examined the staphylococci derived from an infected finger, the cervix, and the blood of a puerpera who was admitted under the picture of puerperal sepsis, to determine the hemolysin production. It was positive only in the staphylococci derived from the infected finger. That from the blood was negative, hence it was impossible to state definitely that the infection was not puerperal.

Puerperal Fever. In the case reported by Leopold,[2] the patient, a III-para, was delivered spontaneously without any internal examination having been made. Her condi-

(1) Münch. med. Woch., March 14, 1905.
(2) Zentralb. f. Gyn., No. 32, 1905.

tion was very satisfactory in the following days. She had no temperature, and since the hospital was overcrowded, she was permitted to leave on the ninth day at her own request, having sat up a little while the day before. As was afterwards learned she entered another hospital two days later with the clinical picture of peritonitis. She had been taken ill immediately after leaving the Leopold clinic. Laparotomy was performed and about a half pint of pus, containing gonococci, was removed. The origin of the peritonitis could not be determined. The parametria and appendix were normal. Four days later the patient died under symptoms of sepsis. Necropsy revealed septic endometritis and several foci of pus in the myometrium, especially in the vicinity of the tubes.

Leopold advises very strongly against allowing the patients to get up before the ninth day, and allowing them to remain up before the eleventh. This case illustrates the possibility of a latent process (gonorrhea, syphilis, tuberculosis, and infection with B. coli) being aroused by being up too soon, though it is admitted that it may occur even though the patient has not been up and around, as Leopold once observed in a patient who died two days after being taken ill on the 11th day of the puerperium.

[In such cases the possibility of unusual methods of infection must be considered. Such are self-examinations, coitus, douches, etc. The Editor has met with cases of infection positively ascribable to each of these causes.]

Puerperal Infection. Foulerton and Bonney[1] made a very careful bacteriologic examination of the lochia and secretions of 3 series of pregnant and non-pregnant women.

In the 1st series there were 54 puerperal cases with fever. In the 2d series there were 12 normal puerperal cases. In the 3d series there were 30 non-pregnant women. Glass tubes containing a sterile copper wire with some sterile cotton wool on one end were plugged at both ends with sterile cotton. The plug at the upper end was so arranged that it could be removed by making traction on a cord wound around the tube. The tubes were carefully sterilized. The culture media used were glycerin-agar, peptone-agar, inspissated beef juice, and nutrient gelatin. The glass tube was introduced into the uterus with great

(1) Lancet, April 8, 1905.

care. The plug was then pulled out and the copper wire pushed up into the uterine cavity, which was swabbed with the loop of cotton wool.

The normal cases furnished negative findings. In 7 of the puerperal cases the vaginal secretions were examined and 3 showed no growth. The germs found were the B. coli in 1, S. pyogenes in 1, both in 1, and a diplococcus not staining (Gram) in another. Of the 14 fatal cases the uterin findings were positive. Of the 26 cases having a temperature (102° or more), 21 gave positive findings. Of the remaining 14 only 4 gave positive findings.

Nature and Clinical Significance of Vaginal Streptococci. Reber[1] studied these from a biologic standpoint by determining the agglutination and hemolysis. The vaginal streptococci cannot be distinctly separated from those derived from septic processes. The hemolytic action in both never begins before the third day and usually on that day. It also never ceases later than the seventh day and usually on the sixth or seventh. It varies in both in an atypical manner, consequently a difference between vaginal streptococci and the S. pyogenes can be established from a scientific standpoint. In spite of the frequency with which the vaginal streptococci may be demonstrated in healthy pregnant women, they seldom produce a severe or moderately severe puerperal condition and *very rarely* are the cause of the severest infections. They may therefore, for a long time, remain in the same relation to the pregnant woman as the non-virulent saprophytes.

It is therefore easy to understand that the vaginal streptococci, even though they may enter lacerations resulting from labor, rarely produce a wound infection, but, on the other hand, the same streptococci, if they gain entrance to the uterine cavity, may produce toxins which by their absorption may lead to a wound intoxication.

Gonorrhea in the Puerperium. W. S. Stone and E. McDonald[2] report on 17 cases of infection by the gonococcus, and state that such cases are present in a much larger percentage than is usually thought to be the case. The best place to take smears was within the cervix and about the level of the internal os. Immediately after

(1) Zeitsch f. Gyn., B. LIV, H. 2.
(2) Surgery, Gynec. and Obstet., February, 1906.

labor the smears were found to be obscured by blood cells. Demonstrations of the cocci were seldom successful before the fifth day of the puerperium, but their detection became progressively easier as the puerperium advanced. Streptococci were found associated with the gonococci in two cases and the colon bacillus in 1 case. Of 53 cases of fever where the gonococcus was looked for it was found 17 times. The temperature curve of the fever patients varied so that no reliance could be placed on this sign for diagnosis. The most common type seemed to be that of a sudden rise, followed by return to normal in three or four days.

Gonorrhea latent in pregnancy commonly spreads upward with rapidity during the puerperium, as was shown by the presence of abdominal pain and rigidity in patients not previously thus affected.

All the patients in this series were primiparæ and the tendency of gonorrheal disease to spread upward to the tubes in the first puerperium is believed to sufficiently account for this fact. Attention is called to the necessity of examining for the gonococcus in all cases of late abortion and if adnexal disease follows abortion we should be slow in claiming that it is the result of the abortion until we definitely ascertain that the gonococcus was not the cause of both conditions.

[Voorhees recently reported 104 cases of labor in the presence of gonorrhea and complications were surprisingly few. The Editor has delivered many cases in which the woman had gonorrhea and only rarely has there been any primary sickness. Many of these cases have been sterile since the first labor, but fever in the puerperium has been absent or minimal in the majority. Gonorrhea is so common and puerperal infection so rare (in clean hands) that one must not ascribe too important a rôle to the gonococcus. —Ed.]

Abscess of the Placental Site. E. W. Saunders[1] briefly relates a case in which immediately following the placental expulsion a quantity of pus and blood poured from the vagina. The uterus had contracted well and there was but slight hemorrhage. Within a few minutes the patient had

(1) Journ. Missouri State Med. Assn., July, 1905.

a violent chill, was cyanosed and the pulse soon became very rapid. The fetus weighed between 12 and 14 pounds and was dead. The mother recovered after a long course of sepsis. The abscess was located in the center of the placenta and apparently did not result from an old blood clot. The infection was supposed to come from the tube though no history or evidence of a salpingitis could be obtained.

[The Editor has had several cases where the delivery of the placenta was followed by a purulent discharge from the uterus. It was never possible to prove that it came from the placental site and not from the tube. One of these cases ran a course of sepsis. In one case of the Editor's the woman after a three-day fever had a discharge of pus through the uterus from the right tube. This was on the ninth day, and had happened in a previous puerperium also.]

Pathology of Thrombosis of Superior Mesenteric Vein. The clinical diagnosis is by no means an easy matter. According to Amos,[1] it is always to be taken under consideration when there are symptoms pointing toward a possible ileus and when the blood has previously shown increased coagulability by thrombosis elsewhere or through influence of the puerperium or the eclamptic state; also in cases of congestion of the portal vein or artificial thrombus formation due to operations or suppurative processes in this region. The presence of a resistant tumor with intestinal resonance is an important differential diagnostic point against ileus. The early appearance of ascites is suggestive of the occlusion of the vein.

Amos reports 2 cases and quotes a number of others rather fully. One of his cases is of considerable interest, since the diagnosis was made two days before the patient died. The patient, a IV-para, was brought into the hospital in a comatose condition with the 6-months' fetus expelled spontaneously on the way. She had had a number of eclamptic convulsions before admission and continued to have them off and on until the next day. Extreme restlessness continued for several days, when improvement was rapid, though she complained considerably of pain in

(1) Zeitsch. f. Geb. u. Gyn., Band. LV.

the stomach. She was up on the 9th day, but pains became worse at night and were referred especially to the region of the ureter. On the 11th day post-partum vomiting set in, but was not fecal. Bowels moved naturally until the 17th day. In the meantime pains became severer, so much so that patient could hardly be controlled. The following day the abdomen became distended and a broad, tumor-like resistance could be felt extending from the left hypogastric region to the symphysis. It was very sensitive to touch and was tympanitic on percussion. The following day the patient collapsed and became unconscious while a large amount of dark brown, foul smelling, fluid feces passed. During the night there were similar occurrences. The pulse became very small and ran up to 144, while the temperature went down and death finally intervened.

At no time during the illness did the temperature go beyond 100.7° F. The evening before she died the temperature was as low as 96.4° F.

Necropsy revealed among other things a considerable amount of blood-tinged fluid in the peritoneal cavity. Several coils of the small intestine were of a blackish-red color and considerably distended. The intestines in the right half were normal in appearance. The jejunum and ileum were about equally involved in the necrosis. The corresponding mesentery was thickened and indurated. Here and there hard lumps and strands could be felt, which upon section proved to be the thrombosed veins and swollen glands.

The principal signs and symptoms are the more or less sudden attack with pains in the stomach, and later severe colicky pains in the abdomen. Often severe backache. Diarrhea or constipation and vomiting. Increased pulse without corresponding rise in temperature. The abdomen slightly distended. In some cases a sensitive resistant tumor furnishing a tympanitic note, and finally marked bloody stools with collapse, increased pulse rate and decrease in temperature.

Thrombosis and Embolism in the Puerperium. According to Richter,[1] the thrombi of the puerperium are either

(1) Heilkunde, May, 1905.

the result of dilatation or inflammation, the former occurring especially in women of poor nutrition and weak musculature.

The location of the thrombus may often be determined by the consequences. If it is located in the pelvic veins, the extension upward is indicated by the appearance of albumin in the urine. A stitch in the side, which is often complained of, is frequently a symptom of an embolic process. The most important prodromal symptom of thrombosis or threatened embolism is Mahler's symptom, otherwise known as the "climbing pulse symptom." It is an almost absolutely sure sign and may reveal a concealed thrombosis. It is the most important early symptom available to institute a severely prophylactic treatment of the above mentioned conditions and the "puerperal lung diseases." From a prognostic standpoint, the return of the pulse rate to normal is very important, and indicates that the patient is passing out of danger.

[The Editor cannot agree with the writer that Mahler's sign is "almost absolutely sure" in cases of thrombosis, for he has seen such cases when there was no increase of the pulse rate. Mahler said that in cases of puerperal thrombosis of veins the pulse gradually rose in frequency, even before there were external evidences of the process.]

Acute Cholecystitis in the Puerperium. This occurrence is rarely observed, and is often mistaken for puerperal sepsis. Vineberg[1] reports 2 cases that recovered after cholecystotomy.

One case occurred in a V-para. The labor was normal and the puerperium likewise until the 9th day, when the patient was attacked with severe pain in the abdomen and a rise in temperature to 103°. There was no nausea nor vomiting. At first the pain was all over the abdomen, later on the greatest tenderness was found in the right hypochondrium. Upon closer questioning it was elicited that she had been subject to "cramps in the stomach" for several years. An operation was performed and a very large gall-bladder containing free pus and numerous small stones was found. Temperature became normal the 3d day, and recovery was uneventful.

(1) Medical Record, April 8, 1905.

The other case occurred in a primiparæ on the 10th day after confinement. The clinical picture was practically the same as above. Operation revealed a large gall-bladder containing many small stones. This complication should be more carefully sought for, since Naunyn and Schauta state that pregnancy and labor favor biliary colic and it is undoubtedly often overlooked.

[The Editor had 2 cases of cholecystitis in the puerperal state. In the first the patient was sent to a hospital to be treated for puerperal sepsis. Examination discovered a much enlarged and tender gall-bladder. Jaundice developed. Under expectant treatment the symptoms all subsided. The other was a pregnant woman with fever of irregular type, pain in right side and a tumor the size of an orange over the region of the gall-bladder. She was 6 months advanced. Under rest in bed the symptoms subsided and the woman was delivered safely at term.]

Oral Sepsis in Puerperium. Leigh[1] reports a case in a primipara, 10 days after a normal labor. The temperature suddenly rose to 105° and varied a great deal during the next 13 days, sometimes being subnormal and then again high. The lochia was normal and there was no tenderness in the abdomen. It was then discovered the patient had an alveolar abscess which she had tried to open with a safety-pin.

Puerperal Infection Due to Vincent's Bacteria. Schmidlechner[2] reports the first case of puerperal infection due to Vincent's Bacillus fusiformis and spirillum. Such cases have undoubtedly been observed before, but were probably called *Ulcera puerperalia.*

The patient was a primipara and suffered a slight tear, which was repaired. On the second day the pulse and temperature went up, accompanied by a chill. Examination revealed an ulcer on the site of the tear. Sutures were removed. Ulcer was treated with iodin. The infection, nevertheless, soon traveled upward and in spite of the use of iodin, iodoform and irrigations of the uterus with 50 per cent alcohol, invaded the uterus and the parametria.

Death occurred 14 days after initial appearance of the

(1) British Med. Journ., April 22, 1905.
(2) Zeitsch. f. Geb. u. Gyn., Band. LVI, H. 2.

ulcer, under symptoms of pyemia. An examination of the blood during life and after death proved negative as to finding the Vincent bacteria, corroborating previous statements—that the infection does not travel through the blood or the lymphatic system.

Diphtheritis Vaginæ and Osteomyelitis in the Puerperium. Freund[1] reports a case in which a primipara, who had been examined but once before the rupture of the membranes, was delivered normally, and had but a slight frenular-vaginal laceration. Silkworm gut was used in suturing. On the 3d day temperature of 100.6 and on the 4th day 102.5. It was the same the following two days. The wound was covered with a gray membrane which proved to be due to the Loeffler bacillus. There were few streptococci present. The child's navel became infected and eventually it died of diphtheria. The mother was treated with antitoxin and antistreptococcus serum, and recovered after several periods of fever. Etiology was not clear, though there was an epidemic of diphtheria and scarlet fever present.

In a second case the labor was so rapid that an internal examination was not made. The following day the temperature was already 102.5. The stitches were removed and the temperature dropped, but went up again on the fourth day. Diphtheria bacilli were found in the membrane on the wound. Only a few streptococci were present. Antitoxin was used with success. The baby was not taken ill. These two cases were observed within a short time of each other.

The third case was a tuberculous primipara who was delivered spontaneously. On the sixth day the temperature suddenly shot up and remained very irregular until death on the 28th day. She had many chills, but the genitalia were normal. At the end of a week a very painful protuberance about the size of an egg was observed over the lower part of the sacrum. The autopsy revealed a primary osteomyelitis between the coccyx and sacrum. The coccyx was detached. It was later learned from the husband that the patient had suffered from considerable pain in this

(1) Zentralb. f. Gyn., No. 41, 1905.

vicinity and had difficulty in walking during the last months of pregnancy.

Scarlet Fever in the Puerperium. Salge[1] says that a woman with scarlet fever may safely nurse her child. She herself will not suffer any harm by continuing to nurse. The fetus is not endangered and it is practically immune during the first 6 months anyway. A streptococcus infection is not to be feared if the mucous membrane of the mouth is not injured. On the other hand, clinical as well as experimental experiences have proven that the mother's milk furnishes the best protection against pus infection. The drawbacks of artificial feeding must also be considered.

According to Salge, the other infectious diseases, such as measles and diphtheria do not contraindicate nursing. In diphtheria, the child is to be protected by the use of antitoxin. Nursing is to be interdicted only in cases of tuberculosis.

P. S. Harris'[2] case was exposed to scarlet fever several days before she was delivered. The labor was long and tedious, and was terminated by forceps. On the third day the patient developed obvious scarlet fever, and the uterus was immediately irrigated with a solution of tincture of iodin and an injection of antistreptococcus serum administered. Both the douche and injection were repeated on the following day. The day following the temperature dropped from 104.2° to 101° F. and never again rose above the latter point. Desquamation was freer, especially on the hands and feet. The infant was weaned and the milk gradually disappeared. Convalescence was slow but satisfactory.

Measles. M. Campbell's[3] case was as follows: A young primipara and her brother 6 years old were exposed to measles about the same time. Three days later the patient was delivered of a healthy child, and for the next eight days had a normal puerperium. At this time the brother showed typical catarrhal symptoms and a fever of 102° F. The next morning the patient's temperature rose to 100°. There was no apparent cause for this fever, as all

(1) Berl. klin. Woch., No. 36, 1905.
(2) British Med. Jour., March 31, 1906.
(3) British Med. Jour., Feb. 10, 1906.

the functions were normal. Measles was suspected and the child was weaned. The mother's temperature rose to 103.2° when the rash was profuse. The next day there were some ear symptoms and there was a general facial edema causing excessive swelling around the mouth and under the eyes. The conditions steadily improved and the remainder of the puerperium was satisfactory. When fifteen days old the infant became fretful and two days later he developed a typical rash. The maximum temperature was 101° F. Recovery was complete in all three cases.

[The Editor had a case of measles in an infant of 10 days. The mother escaped.]

Tetanus in the Puerperium. Gottschalk[1] reports a case in which a patient was seized with severe cramps in both hands and feet, 21 days after a normal delivery (slight cramps having been felt during a few days previous). The face was drawn to the right. There was severe dyspnea and profuse perspiration in the face. The fingers of both hands were clenched. Severe pains were felt in the vicinity of the plexus of nerves in the left arm. It was impossible to straighten the fingers and the forearm was immovable. The same conditions existed in the lower extremities. The pupils were dilated and the patellar reflex was absent. Sensation was not disturbed. The pulse was very rapid and the temperature was normal. An icebag was applied over the heart and chloral and sodium bromid given internally. The contractions continued for 3 hours, after which the position of the feet became normal and they were easily manipulated. The contractions in the hands continued, though a few fingers could be moved passively.

The following day everything had resumed its normal status aside from some parasthesia in the finger tips, which continued 2 days longer. Trousseau's sign was positive though Choostek's was negative. Recovery was perfect. The condition was probably due to toxins absorbed from the genital tract.

Prophylaxis of Streptococcus Infection by Active Immunization. Polano[2] has attempted by a new method to

(1) Muench med. Woch., No. 24, 1905.
(2) Zeitsch. f. Geb. u. Gyn., Band. LVI, H. 3.

produce as he calls it "a biological antisepsis" against the streptococcus infection during labor and operations.

Whereas Landmann utilized *living* and Bumm attenuated streptococci in their researches, Polano used *dead* germs and the results obtained were strikingly similar.

For the preparation of the immunizing culture he used only non-living and if possible fresh human pathogenic streptococci. They were obtained from cases of erysipelas, scarlatina, puerperal fever, angina, and phlegmons in order to get various varieties combined. A small amount of human ascitic fluid was added to the bouillon. They were not passed through animals but were immediately centrifuged, and the bodies alone used. The latter were then suspended by means of the addition of a small amount of carbolic acid. Before using the culture was diluted with sterile salt solution. The concentrated culture represented in 1 c.c. 100 c.c. of ascites bouillon.

The injections were preferably made in the pectoral muscles and about 24 hours before the operation or labor.

All the experiments upon rabbits proved satisfactory and harmless. The rabbits that were immunized were unaffected by the streptococci which in the same amount caused death in the control rabbits. To prove the harmlessness of the material, Polano had twice the necessary quantity injected into his own body. There was but a very slight general reaction, some rise in temperature (99.8° F.) and a pulse of 104. It was then injected in 60 patients in the clinic who were either delivered or operated upon and not a single case of sepsis developed. In one case an ovarian abscess burst during the operation and the abdominal cavity was bathed with the fluid which contained active streptococci.

Certainly the experimentation in only one hospital and with a relatively small number of cases is insufficient to prove the absolute effectiveness of this method and Polano desires other and larger clinics to prove or disprove the same.

Aronsen's Serum in Puerperal Sepsis. Hanel's[1] experience has been most satisfactory. He used the serum in three cases with good results. In two the temperature

(1) Deutsche med. Woch., No. 45, 1905.

was very high and the injection of 50 and 100 c.c. of the serum sufficed to improve the condition to a marked extent at the end of 24 and 36 hours respectively.

The third case was an unusually unfavorable one, having been uninfluenced by the use of ice, ergotin, and ung. Credé for four days. One hundred cubic centimeters of Aronson's serum were then injected and in a few hours the temperature dropped 4.5 degrees. The following day the temperature rose to the former height, and 100 c.c. were again injected in the evening. The following morning the temperature was nearly normal and the general condition very much improved. Convalescence was then rapid and without complications. He recommends large doses of the serum (100 c.c.) in the very severe cases, to be repeated in 24 hours if there is no decided effect.

As to the site of injection he prefers the lateral abdominal region. Unfavorable reaction was not observed, even when very large doses were used. When there is the least suspicion of infection Hanel injects 20 c.c. of the serum and he believes that good results in severe cases may be derived from small doses frequently given providing they are begun early.

Intrauterin Manipulation During the Puerperium may be undertaken as a prophylactic or curative measure. When they are indicated, Pinard[2] recommends, in the event that a douche is desired, a 1:4000 solution of mercuric iodid or a solution of carbolic acid. These douches may be given intermittently or continuously in very severe cases. They are indicated if there is a rise in temperature during the first few days, whether the lochia are foul or not, provided that affections of the breasts, skin, or internal organs are excluded. Two of them are to be given every 24 hours, but if there is no improvement in 48 hours other more energetic measures are necessary. In all cases douches are not to be given after the eighth day, because they are not only superfluous but may be harmful.

If the intermittent douches have no effect, they may be given continuously. A carbolic acid solution (1:100) is first used and is followed by the use of a 1:4000 solution of mercuric iodid for 30 minutes. The phenol solution is

(1) Revue prat. d'obstetr. et de paed., June, 1905.
(2) (Abst. Zentralb. f. Gyn., No. 40, 1905.)

to be weakened from time to time until a 1:600 is used. The eventual dark discoloration of the urine need cause no alarm. Pinard has been able by this method to reduce the mortality of the septic cases considerably.

Curettage was also beneficial, but should not be used before the third day and if the lochia still remain foul after douching as above described, curettage is performed, but only with a large, dull curette. After the seventh day it is useless and dangerous. This treatment applies only to cases of puerperal infection and should there be any placental tissue present, it is to be removed with the finger.

Treatment of Puerperal Infection. v. Rosthorn[1] advises very careful examination of patient and exclusion of all sources of infection other than the genital tract, such as an angina, suppurating wounds, etc.

The treatment resolves itself into *local* and *general*. The course followed by v. Rosthorn is primarily: (1) intrauterin irrigations (once, several times daily, and even continuous) with sterile water or weak antiseptic solutions; (2) careful digital examinations of the entire uterin cavity and manual removal of retained products; (3) curettage; (4) drainage and tamponade; and (5) vaporization.

Intrauterin manipulations, other than irrigation, are to be zealously avoided as far as possible, since the retained products may be washed out quite easily at times. It is quite necessary to observe certain precautions, such as avoiding too much traction on the uterus with the volsella, a moderate amount of pressure in the irrigation, and securing an ample return flow by means of a special catheter or a sufficiently dilated os. The irrigations were enhanced in value to a considerable extent by repeating them several times daily, by the introduction of a glass drain, tamponade of the uterus with iodoform gauze, or the use of a gauze drain which was saturated with alcohol from time to time. The combination of douching and tamponing after thorough drying of the cavity furnished the best results.

The use of a reliable preparation of ergot is recommended. Thermic applications, such as hot (103°) vag-

(1) Deutsche med. Woch., No. 23, 1905.

inal douches and the ice bag in the hypogastric region, the latter especially when a certain amount of tenderness has developed, are valuable in combating subinvolution.

The use of cool baths, sponges, or packs is resorted to when the temperature is high and continuous. The packs are used when the process is not as yet localized, or when moving the patient is still to be feared. In the chronic forms the cool bath is the most desirable, since that great preventive factor of bed sores, scrupulous cleanliness, is incorporated in the treatment. Internal antipyretics are interdicted as harmful and the use of infusions of normal saline solution has been disappointing, though von Rosthorn thinks that in combination with large doses of nuclein (5 to 6 gms.) every 12 hours better results may be attained.

Hysterectomy is placed in the background and is indicated only in cases: (1) where a putrescent condition is present, as in carcinoma or myoma, accompanying the puerperal condition; (2) with a complicating extensive tear of the uterus; (3) inversion or prolapse of the uterus; and (4) retention of decomposed products which cannot be removed by the usual means. The vaginal route is recommended in all cases, except those complicated by carcinoma. The value of frequent blood examinations to determine the course of procedure is not to be overlooked. Resection of the spermatic and hypogastric veins is valuable when the pyemic form is present, though the exact limitation of the embolic process unfortunately cannot positively be determined.

Intravenous injections of the silver salts are considered harmless, easily performed, and occasionally of benefit. Their inhibiting influence upon the bacteria is probably due to a chemotactic action, since great numbers of leucocytes are sacrificed in the process. Were the blood-making organs to fail the action of the salts would be negative. It is also possible that there is some electro-catalytic action. On account of the harmlessness of the remedy, and since we have no specific it ought to be tried, and certainly not discarded.

The following comparative table of the 6 sera in use in Europe furnishes considerable information:

Author	Animal Experimentation	Human Experiment	Dosage	Method of Production
1. Marmorek (Pasteur Institute)	no certain action	Many publications by Savor (Puerperal Fever)	5-120 cc.	Immunization of animals Streptococci used from human scarlet fever and anginas
2. Aronson (Schering Establish. Berlin)	splendid action	Baginsky (Scarlet Fever) Meyer-Bumm (Puerperal Fever)	10-60 cc.	
3. Tavel (Institute for Infectious Diseases, Berne)	mild action	Tavel-Walthard Streptococcus Infection)		
4. Moser (Hochster Works)	?	Escherich (Scarlet Fever)	30-180 cc. possibly often	Immunization without use of animals
5. Meyer (Merck - Darmstadt)	?	Articular Rheumatism	10-30 cc. possibly often	
6. Paltauf (Serum Institute, Vienna)	?	Peham (Puerperal Fever)	50-100 cc.	

Owing to the fact that the infection is so often mixed and of a varied character, Rosthorn recommends the idea that a "polyvalent serum" (Tavel *et al.*) must be produced as correct. The explanation of the exact action is still under consideration, though the importance of the production of phagocytosis (in whatever way it may be produced) must not be overlooked. Tavel suggests there may be a lack of cytoses or leucocytes in the negative cases, and when we once know what element is lacking, the treatment will be suggested.

Indications for Hysterectomy in Acute Puerperal Sepsis. C. G. Cumston[1] states the septic uterus is divided into three general classes:

(1) The uterus alone presents marked lesions and the other pelvic organs are normal, or where there are such marked lesions as rupture of the uterus, adherent placenta, carcinoma or fibromata complicating the sepsis. In these cases hysterectomy is clearly indicated.

(2) Cases where the uterus presents infected foci, but where other organs, such as the lungs or spleen are also

(1) Am. Jour. Obstet., November, 1905.

involved. Many surgeons claim that hysterectomy is absolutely contraindicated in these cases.

(3) Those cases where the uterus has served only as an entrance to the infection, and is itself free from lesions. In these cases hysterectomy is worthless.

While the writer does not believe that bacteriology is able to determine any indication for hysterectomy in acute puerperal sepsis, he claims that much information can be gained by an examination of the blood. From this standpoint he again divides puerperal sepsis in three groups, the mild, medium, and severe.

The first is characterized by an increase in the number of red cells, a leucocytosis around 18,000, a polynuclear leucocytosis not exceeding 85 per cent and a decrease of the eosinophiles to about one per cent. The medium types show a hyperleucocytosis between 20,000 and 30,000, a polynuclear leucocytosis exceeding 90 per cent and a disappearance of the eosinophiles for several days and a greater abundance of the basophile elements. The severe forms are recognized by a hyperleucocytosis remaining above 25,000, a permanent polynuclear leucocytosis between 90 and 95 per cent, and a permanent disappearance of the eosinophiles, mast cells and plasma cells.

In these three forms convalescence is indicated by the decrease of the leucocytosis and polynuclear leucocytosis, with an increase in the number of red cells and mononuclear leucocytes, and the appearance of the eosinophiles and the basophile elements. Cumston concludes that hysterectomy is contraindicated when one finds a hemalogic formula characterized by the absence of leucocytosis and by leucopenia, as in this condition the patient has already become so completely infected that operation would be useless.

When the blood examination shows a polynuclear leucocytosis varying from 85 to 90 per cent, with a slight leucocytosis and the presence of eosinophiles, it means that the outlook is good and that hysterectomy will be sufficient to effect a cure.

Hysterectomy may be indicated in two conditions; first, when the infection is serious from the start, with a high leucocytosis, a high polynuclear leucocytosis and a complete absence of the basophile elements; secondly, when

the minor surgical procedures do not result in a decrease of the leucocytosis.

All things considered, inasmuch as there are, at the present time, no signs or symptoms, clinical or otherwise, that would furnish rational indications for hysterectomy, these cases should be treated conservatively, unless localized lesions can be detected in the uterus by careful bimanual examination.

Laparotomy and Drainage of Free Puerperal Peritonitis. Seven cases treated by laparotomy and drainage, in Bumm's clinic, are reported by Kowanetski.[1] Five of them recovered. In two the infection was streptococcic and in the other three, mixed and saprophytic. The diagnosis was made by puncture. Meteorism, vomiting, belching, and moderate abdominal pain usually appeared slowly and late.

Incisions were made in the deepest lumbar and inguinal regions. Rubber drainage was then established through each side and from side to side. Drainage was very free and from time to time the drains were flushed with saline solution to keep them pervious. Relief was very rapid and recovery occurred in 20 or more days. It is necessary to make the diagnosis by puncture and not wait too long.

Surgical Treatment of Puerperal Pyemia. The feasibility of *ligating the pelvic veins in cases of puerperal pyemia* has again been demonstrated by Bumm[2] in his report of 4 cases of chronic and acute puerperal pyemia treated by ligation of the spermatic and hypogastric veins. Two of the chronic cases and the acute case recovered. The latter being the only case of the kind reported. One of the chronic cases might possibly have been saved had the exact condition been recognized earlier. Indications pointing to a septic endocarditis, which, however, did not exist, postponed the operative intervention until too late.

The results obtained by ligation only were fully as satisfactory as those obtained by Trendelenburg and Michels by means of ligation and resection. The ligature of the spermatic vein was performed more as a prophylactic measure and apparently had no appreciable influence on the result. In one case an aseptic thrombus was discov-

(1) Berlin klin. Woch., No. 30, 1905.
(2) Berlin klin. Woch., No. 27, 1905.

ered. The operation is not a serious one and is unaccompanied by any disturbance aside from some edema of the genitalia. The temperature drops very quickly.

Bumm does not consider hysterectomy a necessary adjunct, since after ligation and perhaps resection, the septic thrombotic masses are no longer carried into the general circulation, and in case that localized abscesses form they may be opened and evacuated, after which the chills will promptly cease.

The case of acute pyemia was one following an abortion. The uterus had been curetted prior to admission. Chills, with temperature over 104°, occurred about every other day at first, but finally daily, so that 18 days after the abortion laparotomy was performed. The right spermatic and hypogastric vein, at its juncture with the iliac, were ligated. The temperature dropped to normal and the chills ceased. On the fourth day the temperature rose to 104.7°, but unaccompanied by a chill. It gradually dropped to normal and remained so after the twelfth day. Blood examinations were made daily and it was interesting to note the increase to normal of the polynuclear neutrophiles and the eosinophiles.

Opitz[1] reports a case of *puerperal pyemia* following an abortion at 3 months attended by a midwife. He removed a small placental polyp and several shreds of retained placental tissue, after which the condition became much worse.

Later on the patient's condition became so serious the spermatic veins were ligated and divided by the cautery. Her condition improved immediately, but the patient died suddenly during the afternoon after drinking a glass of milk. Necropsy did not reveal the cause of death. The suspicion of embolism of the lung was not corroborated.

Opitz believes that cases of pyemia following abortion (especially criminal), with removal of remnants of placenta, and placenta previa are especially unfavorable as to prognosis. He collected 19 cases that were operated with 6 recoveries, and 18 cases that were not operated with 13 recoveries. He ventures the opinion that some of the operative cases might have recovered regardless of the operation and on the other hand the shock and danger

(1) Deutsche med. Woch., No. 50, 1905.

of the operation might have caused death in some cases. Nevertheless the operation is not to be discarded, but used in selected cases, especially the chronic.

Haeckel[1] reports a case of puerperal pyemia treated surgically, by ligating *both hypogastric and both spermatic veins,* with good results. The patient had been curetted for a hydatidiform cyst and immediately acquired a temperature. This soon went down and patient had a normal temperature until the 24th day, when she had a severe chill, which recurred daily until intravenous injections of collargol were given. Nevertheless the temperature remained high and her general condition became so serious finally, the chills having returned, that the operation was performed as a "dernier resort" on the 44th day.

The salutary effect was practically immediate and the patient was able to leave the hospital six weeks later.

A case of acute puerperal pyemia treated in a similar manner did not terminate favorably. It was complicated by an attack of pneumonia and also by an anomaly in the right hypogastric vein which was a plexus of veins instead, as a result of which it was doubtful whether ligation was perfect or not, consequently, since there was no definite improvement, the right common iliac was ligated 20 days after the operation, without any swelling of the right leg resulting therefrom, though the chills and temperature were not influenced in the least.

[After reading all these abstracts, one is impressed with the general surgical trend of the treatment of puerperal infection. There is much excuse for this, as the accoucheur is at present groping blindly in the dark and grasps eagerly at any light that will help him to save the stricken patient.

Surgical treatment for puerperal fever is not new. Drainage of the peritoneum in cases of puerperal peritonitis was performed at the Cook County Hospital in 1891, and had been often done before this time both here and abroad. The results were bad. Extirpation of the uterus has had such a large primary and secondary mortality that it has not attained much vogue. As usual the favorable cases are reported in the journals; the unfavorable cases one hears of in the practice of one's colleagues,

(1) Deutsche med. Woch., No. 41, 1905.

and experiences them himself. Judging from these reports extirpation of the uterus is useless in combating severe cases of puerperal infection, and one can readily see why. In such cases the infection is no longer local, it is a general septicemia, and removal of the uterus removes the atrium of infection and will do no more good than the amputation of the foot to cure a case of tetanus. In cases where the uterus contains abscesses, and where the organism is being continually fed with increasing doses of infection, removal of the organ might cure. It is almost impossible to make the diagnosis in such cases, unless there is a sloughing fibroid, or carcinoma, and occasionally even cases where such a condition could be reasonably expected get well without operation. The recuperating powers of the pelvic organs in women are sometimes really wonderful. So many apparently hopeless cases of sepsis recover that one grows skeptical of the effect of any one method of treatment, however radical or however striking the seeming result. Such turns for the better occur without any interference.

Regarding the ligation and resection of the spermatic, hypogastric, and even the common iliac veins, judgment should still be reserved. Arguing from the analogy of the success obtained in brain surgery, in cleaning out the infected basal sinuses one would expect similar success in pyemia of pelvic origin. A brief consideration of the anatomy of the parts will show that the chances are against any great success in pelvic operations. It is seldom one vein that is involved; it is many, and on both sides of the uterus. Even if both internal iliacs and the spermatics could be ligated, collateral circulation from the uterus would soon be re-established through the external iliacs. However, one should not pass judgment too early. It hampers progress, and progress in the treatment of these desperate cases is too precious. In carefully selected cases therefore the Editor would perform ligation of the veins of the broad ligament, and even the internal iliacs. This operation, in this country at least, will be performed very seldom, because the number of cases of sepsis gathered in any one institution is very small, and on the isolated cases few men acquire courage to test new procedures.

Surgical treatment of pelvic abscesses is, of course, a

well recognized procedure. One should not be in too much haste, nevertheless, to open inflammatory collections of fluid in the pelvis. A pelvic cellulitis less often suppurates than it is absorbed (if treated properly). Immense exudates, even reaching as high as the navel, have been completely reabsorbed in the course of a few weeks. Even pelvic peritonitic effusions may disappear, though more rarely. Pyosalpinx may become quiescent, and even permanently harmless. At any rate it is hazardous to remove them during the period of fever. The cases where such acutely inflamed tubes have been successfully removed are those in which the vaginal route was chosen. As soon as it is known that pus is accumulating in the pelvis, the indication for operation is given, and the rule is to be as conservative as possible, because Nature if given half a chance does work wonders.

There is still a large number of adherents to the douche and intra-uterin antisepsis. Indeed, those who do not believe in local treatment for puerperal sepsis are in the minority. The Editor belongs to this minority. Ten years ago his experience taught him that indiscriminate douching, curetting, packing the uterus, etc., etc., were both dangerous and useless, so he gave them up. The cases of infection treated since then have done better than before. The Editor now repeats his position on the subject of local treatment of puerperal infection:

1. If there is reason to believe that a piece of placenta, or a large amount of blood and decidual debris, still remain in the uterus, the organ should be cleaned gently with the gloved finger. A 1 per cent lysol douche is given before and after the intervention, and if there is bleeding the utero-vaginal tract is filled with 5 per cent iodoform gauze, which is removed in 5-6 hours.

2. After such a proceeding, and in all cases where the uterus is believed to be empty, no local treatment is given. No vaginal, nor intra-uterin douches, no curetting, nor packing, not even vaginal examination till the case is well on in the third week.

3. When pus is accumulating the part is to be drained.

The mainstay in the treatment of puerperal fever is good nursing.

The Editor has used saline solution, hypodermically and

by rectal irrigation. It is a valuable adjunct to the treatment. Unguentum Credé has been a failure in his hands. He has not used silver injections into the blood, nor the Barrows' injections of bichlorid. The results reported are not encouraging and the danger is not small.

The antistreptococcus serum in his hands has done, he believes, a little good. It must be used in large doses, 100 to 200 c.c. a day, and early. Jaggard used to say men's opinions were like coins—they had value according to their stamp and quality. The Editor cannot prove that he has obtained good results with serum, but the general impression received has been good. At least never has any harm been done the patients by even very large doses, and the Editor uses it in all sepsis cases early and often. If a polyvalent serum is put on the market, such would be the ideal remedy. Many failures will be inevitable, because sepsis is not always caused by the streptococcus, and often it is combined with other bacteria.

Nuclein, used often, has never shown any results; indeed no drug has ever shown the least specific action.

The outdoor treatment successful in tuberculous diseases has been tried in such cases also and good results are reported. This innovation promises much and is rational. Hospitals should be built so that patients' beds may be wheeled out of doors readily.

As far as prognosis is concerned little of value has been added in recent years. The determination of bacteriemia does not always presage a fatal ending, nor does the blood count give reliable information. General experience gives the safest prognostics, though often enough Hippocrates' words, "Experience is fallacious," come true in puerperal sepsis.

The Editor cannot close without saying the greatest cures will be accomplished by prevention, for puerperal fever is, above all others, preventable, and a heavy responsibility usually rests on the practitioner.]

The Importance of a Strictly Limited Lactation. A. D. Fordyce[1] concludes from a study of the relationship between mother, fetus and lactation and the concurrence of pregnancy and menstruation the following facts: Of 100 instances where menstruation occurred during lacta-

(1) Lancet, Jan. 27, 1906.

tion, in 27 it recurred within two months from the confinement, and in 92 within nine months.

In a series of 253 cases of lactation it was found that menstruation occurred earlier after labor with the first three children than with the later pregnancies, although the period of lactation was not any shorter in point of time. It was also found that in a considerably greater proportion of cases does menstruation return within six months in the later children than in the earlier children and as the average period of lactation of the later children was as long as the earlier children, it appears that when menstruation occurs in late lactations it occurs early or not at all.

Pregnancy occurred during lactation 29 times in a series of 259 cases. Of the 100 mothers where menstruation occurred during lactation pregnancy took place in 24. Therefore, in nearly one mother in four there occurred at some period an overlapping of pregnancy and lactation. In five cases this occurred twice, and this occurrence took place in 11 per cent of the lactations.

Fordyce claims that pregnancy is comparatively common during lactation; it is rare within the first six months and uncommon before the first eight months. The widespread belief among the laity that pregnancy is impossible during nursing may work serious injury to the unborn fetus if the strength and nourishment of the mother are consumed in supplying a rich milk to the infant at the breast.

[The Editor has had many cases of menstruation during lactation, and very seldom has noted any harm from it. Even pregnancy he considers no bar for the first ten weeks, if the child is thriving, the time be summer, and the mother well and strong.—Ed.]

The New-Born.

Digestive Disturbances During the First Year. Kermauner[1] found that about two-thirds of the infants when discharged from the hospitals had not yet regained their original weight and consequently were more liable to contract one or more of the diseases of infancy. Many of the

(1) Arch. f. Gyn., B. LXXV., H. 2.

babies have a dyspeptic or catarrhal condition of the gastro-intestinal tract which he found was most often due to the Staphylococcus albus.

This condition was materially altered by strict adherence to *aseptic precautions* and the *conservation of the body warmth.* The former may be obtained only by having sufficient nurses, not less than one to four patients, and the most careful washing of the hands after dressing the genitals of the mother or changing the baby. It would be still better to have the nurses that care for the baby not attend to the toilet of the mother. The diapers should be sterile and changed frequently. A bath is not to be given until after the umbilicus is healed and the substance used in anointing the baby should be sterile.

Nipple shields were invariably used to prevent the formation of fissures and the direct contact of the baby's mouth with the staphylococcus and other bacilli which may be present on or about the nipple.

It is not necessary that these precautions be so closely adhered to later on, since the purpose is to give the child a good beginning. The results obtained by the author were quite marked and demonstrated beyond a doubt the advisability of adhering to the above principles.

Brachial Birth Palsies. From a research into the etiology and pathology of brachial birth palsies, Clark, Taylor and Prout[1] conclude as follows:

1. The cause of the laceration type of palsy is tension on the nerve trunks, which first ruptures the sheath and then the nerve fibers. This accident should be avoided by the obstetrician by not overstretching the child's neck in delivery.

2. The persistence of the palsy is explained as follows:

(a) Rupture of the perineural sheath with hemorrhage into its substance, resulting in the formation of hematomata or hematomatous infiltration of the surrounding tissues.

(b) The cicatricial contraction following the organization of the blood clot and repair of the rent in the perineural sheath. The connective tissue thus formed indents and presses upon the nerve bundles, strangulating them and preventing their regeneration.

(1) Am. Jour. Med. Sciences, October, 1905.

3. The nature of the lesion demands the excision of the damaged areas and suture of the divided ends of the nerve as soon as it is found that spontaneous repair will not take place.

4. In all cases treatment looking to the prevention of deformities and contractures, and the maintenance of the tonicity of the effected muscles should be continued until spontaneous recovery or operative intervention is carried out and for some time afterward.

5. The proper time for surgical intervention has not yet been definitely decided. Probably a year's delay before resorting to operative procedures would be advisable.

Intracranial Hemorrhage in the New-Born. J. C. Turnbull[1] reports a case where forceps were applied to effect delivery after three days of labor pains. The operation was comparatively easy and the child was not asphyxiated to any extent. After 24 hours convulsions occurred, tonic in character, affecting the whole body and nearly equal on both sides. The child gradually became comatose and died in 23 hours.

Necropsy showed no fracture of the vault and no extradural hemorrhage. The brain matter was soft and pulpy and the pia was congested. The whole base of the skull on both sides was filled with dark, fluid blood and a blood clot extended up to the level of the Sylvian fissure, and backward to the occipital lobe. All the subarachnoid spaces were filled with blood-stained fluid. No rupture of any of the main arteries or venous sinuses was made out. No ante-mortem clot was found anywhere. The lateral ventricles were considerably distended with clear fluid and the choroid plexuses were engorged. These appearances seemed to indicate a hemorrhage into the subdural space, probably from rupture of one or more vessels in the pia covering the lower aspect of the left hemisphere. The pressure of the effused blood on the veins of Galen and cranial sinuses had given rise to edema of the brain and internal hydrocephalus.

Turnbull thinks the hemorrhage cannot be accounted for by injury to the head, either by the forceps or the pelvic bones, but was due to the high cerebral pressure

(1) British Med. Jour., March 24, 1906.

which resulted from rigid contraction of the uterus on the placenta and soft parts. The lesson taught by this case is the advantage of terminating the labor before the fetus has been subjected to dangerous compression.

[The Editor is inclined to agree with Turnbull regarding the cause of intra-cranial hemorrhage in cases of hard labor. It is probably often due to the cerebral congestion, the result of pressure by the uterus forcing the head through a narrow pelvis. The hemorrhage may be secondary to intra-uterin asphyxia, and the result of asphyxia alone. Then, too, the hemorrhage may result from the injury of the forceps. In such cases one is on the horns of a dilemma. To leave the labor to Nature is to expose the infant to prolonged pressure and interference with its placental circulation. This leads to minute cerebral hemorrhages and atelectasis pulmonum. To deliver rapidly exposes the child to the danger of a forced passage through a narrow pelvis or unprepared parturient canal. Both are very dangerous. It requires delicate judgment to choose the safe course.]

H. Cushing[1] makes a plea for *surgical intervention in cases of intracranial hemorrhage* in the new-born to save them from a life of imbecility or spastic palsy for which scarcely anything can be done in later life. He believes that many children who were born dead, or who died soon after delivery, were the victims of intracranial hemorrhage. The enormous amount of injury and compression to which a fetal head is subjected during labor is well known, especially where there is dystocia and an operative delivery. The same extent of injury occurring in an adult would cause death by pressure, unless the skull was fractured or opened surgically to allow of some cranial expansion. The distensibility of the fortanels and skull bones provides to a certain extent for this release of pressure, hence many of these children do not die. The clot upon the cerebrum is usually slow in absorbing and the pressure upon the cerebrum during the early part of the child's life when medullation is very active, interferes with the normal expansion and development of the brain and so lays the foundation for a condition of idiocy or palsy.

(1) Am. Jour. Med. Sciences, Oct. 15, 1905.

This author believes the vessels most likely to rupture are those which ascend over the cortex and enter the longitudinal sinus. On the lateral walls of the brain these veins are protected from pressure by following the sulci, but as they approach the vertex they leave the arachnoid spaces and almost without any protection whatever enter the dura at the margin of the longitudinal sinus.

An overlapping of the parietal bones to a marked degree, which would be increased by the lateral pressure of the forceps, would tend to tear and injure these vessels, and so produce hemorrhage. The diagnosis would include a history of the labor as well as the degree of asphyxia. The fontanel is bulging and may be so tense as to show no pulsation. The bony outline of the fontanel may be difficult to distinguish. Convulsions, inequality of the pupils, exaggerated reflexes are common; later, paralysis.

Operation should be resorted to as soon as a diagnosis is made. The new-born child stands the cranial operation well. The scalp and parietal bone are elevated, the dura incised concentrically and the blood or clots removed as thoroughly as possible. No drainage.

Cushing details four cases, losing one child because of tardy operation.

[The Editor has seen not a few cases of cerebral hemorrhage of the new born. Several have recovered, some fully, but in one case idiocy remained. Of those on whom autopsy was made all had hemorrhage extending well over the base of the brain. Unless the clot were cortical no relief could be expected from operation. It is well to be mindful of the fact that other conditions simulate hemorrhage—*e. g.,* toxemia, similar to eclampsia; intestinal infection, hyperpyrexia from intestinal intoxication, nephritis, edema of the brain, the last stages of atelectasis pulmonum. One will find convulsions, paralysis, etc., in all these.]

Nasopharyngeal Affections of the New-Born may be acquired as a result of premature rupture of the membranes, during the passage of the head through the vagina, and in its extrauterin existence most frequently from a mastitis of the mother. A predisposing factor is the sudden chilling of the body after delivery or a bath. The infection may be epidemic, *e. g.,* a coryza. A retro-

pharyngeal abscess may also form and remain undetected, unless anticipated. Laurens and Pierra[1] advise careful disinfection after birth, but caution against the use of the air douche or the injection of fluids because of the danger of conveying the infection to healthy tissues, especially the lungs and the middle ear. Dry cotton only should be used in cleansing the nose. The head of the child should be kept slightly elevated to prevent gravitation into the pharynx or middle ear. The nose may be easily cleansed by the use of an emollient and when the nose is not permeable the instillation of a few drops of adrenalin 1:10000 a few minutes before nursing will permit the child to continue nursing.

Infant Consultations. In order to overcome the exceedingly high mortality of infants in the cities of France a number of establishments called "Infant Consultations" have been founded. The mothers after leaving the maternity hospitals are instructed to return to these places with their babies at regular intervals, usually one week.

The opportunity to examine and weigh the infants and give the mothers valuable advice in the care and nursing of their babies is thus afforded. Mocquot[2] had occasion to observe 121 cases in one year in several small towns. None of the infants died in spite of the fact that an epidemic of influenza was raging at the time. The convulsions were due to intoxication resulting from improper diet.

Budin,[3] of the Tarnier clinic, observed 712 cases, of which 26 died, a mortality of 3.6 per cent. They were observed about 9½ months on the average, ranging from 1 to 24 months. During the first year the mortality was 4.6 per cent. The mortality for all of Paris was 17.8 per cent; 96 per cent of the women nursed from the breast entirely. In most cases an increase in secretion could be noted from day to day. The number of nursing women increased considerably as a result of this clinic.

Resuscitation of the New-Born. A new method is described by Gaszynski.[4] After removing all the mucus

(1) L'Obstetrique, May, 1905.
(2) L'Obstetrique, July, 1905.
(3) Nowiny lekarskie, No. 1, 1905.
(4) Abs. Zentralb. f. Gyn., No. 29, 1905.

possible from the throat and mouth the child is laid across the knees at right angles to them with the scapulæ resting on one knee and the head hanging lightly downward. The feet are grasped with the right hand, the index finger between them above the malleoli, and the hands are grasped in a similar manner with the left hand. To produce an expiration the left hand presses downward on the thorax toward the abdominal cavity and behind. The fetal hands are still to be in the grasp of the accoucheur's left hand. At the same time the right hand flexes the thighs upon the abdomen. To produce an inspiration the extremities are extended to a horizontal position, the fetal arms being above the head.

This maneuver is repeated about 20 times a minute. In the interval the heart is massaged. The fetus may also be kept covered. The advantages are that the fluids have opportunity to flow out of the lungs at all times, the child may be kept warm, the heart may be massaged, the method is not accompanied by any of the dangers of the Schultze method, the degree of inspiration and expiration may be regulated, and it is not tiring to the physician.

Apparent Death of the New-Born. Ahlfeld[1] presents decidedly different opinions from the ordinary as to the treatment. Instead of classifying the condition as asphyxia livida or asphyxia pallida, he distinguishes three conditions, the one as a result of cerebral pressure, another as an occlusion of the respiratory tract, and a third, a combination of the two. He dwells considerably on the dangers and also unnecessary use of the Schultze swinging method, claiming that a child which may be saved by that method might also be saved by some other less vigorous procedure.

He reports a case in which the fetus, after a tedious second stage, was born with a very slow heart and respiratory action and died at the end of a half hour in spite of having been kept in a warm bath and occasionally swung by the Schultze method.

Autopsy showed quite extensive cerebral hemorrhage which would have precluded the possibility of its living very long anyway.

(1) Zeitsch. f. Geb. u. Gyn., Band. LVI, H. I.

In spite of its having apparently breathed 16 times the lungs contained no air. Ahlfeld claims that when it is possible for the fetus to live the removal of all foreign substance from the respiratory tract and placing the fetus in a warm bath are sufficient. Irritation of the skin shortens the interval between respirations.

[No man can distinguish a cerebral hemorrhage in the newly born infant from the ordinary asphyxia neonatorum, therefore the treatment is the same for both. The Editor agrees with Ahlfeld that Schultze swingings are dangerous and not often necessary. Less violent methods of resuscitation will almost always succeed. The Editor teaches three principles of resuscitation from asphyxia: First, remove all foreign bodies from the air passages (using the tracheal catheter); second, keep up the body heat, and, third, start respiration. The last principle is carried out by rhythmical compression of the chest, raising the chest by pulling the ribs upward and outward, and, if needful, mouth to lung insufflation by means of a tracheal catheter placed in the trachea. This is a life-saving procedure and no obstetric satchel is complete without this little instrument.—Ed.]

Congenital Tumor in the Sterno-mastoid Muscle. While these tumors are usually, but often incorrectly, considered the result of some traumatism during labor, Pincus[1] reports a case that is without a question not the result of trauma. The infant, weighing less than 6½ lbs., from non-syphilitic parents, was born spontaneously and under normal conditions. It died two weeks later of diarrhea. The second day after labor a hard tumor the size of a hazel-nut was observed in the left sterno-mastoid. The head was not held crooked, nor was there any asymmetry of the face or obliquity of the cervical region. Microscopic examination revealed a chronic interstitial myositis. There was considerable rigid connective tissue, but not a trace of blood pigment. It was therefore of intrauterin origin, the result of some unknown infectious element.

[The physician should hesitate before assigning trauma as a cause for all cases of hematoma of the sterno-mastoid, and before believing a colleague has been the direct cause

(1) Zentralblatt f. Gyn., No. 20, 1905.

of a case of wry-neck. Some years ago the Editor delivered a case by forceps—a generally contracted pelvis, old I-para, hard labor. Later the child developed a myositis in the sterno-mastoid, with asymmetry of the face and hypoplasia of that side of the head. A surgeon said the condition was the result of injury during birth. The disease was plainly congenital. Pincus, in 1895, wrote a very interesting article on this subject and proved that over half of the cases have no history of injury at birth.]

Congenital Hernia into Navel. E. W. Meredith[1] reports two cases of congenital hernia of the umbilical cord. Both children were born under the care of a midwife and no history is available as to the character of the labor. The first case presented a pear-shaped tumor 7x8x8 cm., myxomatous in appearance and quite translucent. A cuff of epidermis extended for a distance of one centimeter above the abdominal wall. Several coils of intestine could be seen but no peristalsis was detected. Palpation did not elicit any impulse during crying. This case was operated upon immediately, the sac and redundant skin cuff removed and the incision closed with through and through silkworm-gut sutures. The patient recovered perfectly.

The second case showed a poorly developed child of 4 pounds' weight and a large oval tumor 10x12x12 cm. The upper portion of the sac was occupied partly by the liver, while the lower part was filled by intestinal coils. Peristalsis was plainly visible. The poor condition of the child was sufficient to contraindicate operation and it died the following day.

Melena Neonatorum. Recovery. E. F. Heap[2] reports an interesting case of a well-developed male child, born in normal labor, who, at the age of thirty-three hours, vomited a considerable quantity of arterial blood. A moderate amount had also passed per rectum. No apparent source of the bleeding could be discovered upon physical examination, and as the child seemed to suffer no ill effects the treatment was only expectant. Three hours later the hemorrhage recurred, both from the stomach and rectum. The child became anemic, cried feebly and showed every

(1) New York Med. Jour., Jan. 20, 1906.
(2) Lancet, Dec. 30, 1905.

sign of acute hemorrhage. Fifteen drops of castor oil and frequent sips of iced water were tried. No further hemorrhage occurred and the grave condition of the patient gradually improved until health was fully restored.

[The Editor believes a large number of cases of melena neonatorum is infectious in origin, and gives a large dose of castor oil as a routine treatment at the start. After this calcium chlorid, 1 gr. every 2 hours and 3i of a 2 per cent solution of gelatin (freshly prepared) every 4 hours. Several cases have recovered under this treatment. If there is a suspicion of syphilis ung. hydrarg. is exhibited.]

Obstetric Injuries of the Cornea. According to Thomson and Buchanan,[1] traumatic keratitis of the new born results from pressure during a prolonged second stage, which pressure is due either to some form of obstruction in the pelvis, to compression by the forceps, or to both combined. This accident is rare, even in really difficult deliveries.

There are two main forms of corneal changes; the first is temporary and is due to edema. It may occur alone or be associated with the second form which is due to a rupture of the posterior lamina of the cornea with subsequent formation of fibrous tissue, and is consequently permanent. The general opacity from edema may last for days or even weeks and may mask the linear opacities. In nearly every instance the clinical course of the disease was identical. This consisted of a "general haze, with indication of striping;" "increase of the general opacity, sometimes to an absolutely impenetrable degree and often obscuring the striping," and finally "gradual diminution of the former, which is due to edema, and increased visibility of the latter, which is due to scar tissue.

Aseptic Management of the Umbilical Cord. J. T. Schell[2] describes his aseptic method. As soon as the child is born the cord is clamped by a pair of artery forceps about 3 inches from the navel. After washing the stump with a 1 to 4,000 mercuric solution, the external coverings of the cord are divided at the amnio-dermal junction with a pair of scissors throughout the entire circumference. Care is to be taken to avoid injuring the vessels. When

(1) The Ophthalmoscope, June, 1905.
(2) American Medicine, Dec. 2, 1905.

these vessels have been exposed the Wharton jelly is stripped away from the abdominal side and a fine sterile catgut suture is applied close to the navel and the vessels cut off close to the ligature. The stump is frequently washed in a boric acid solution, then dressed with a good antiseptic powder and sterile pad. This method is also recommended by Dickinson.

Ophthalmia Neonatorum. J. C. Edgar[1] begins treatment two weeks before labor in all suspected cases by giving vaginal douches daily or twice daily, first with a mild alkaline solution and then with one of bichlorid in strength 1 to 5,000. A 1 per cent lysol douche is given just before labor. In certain cases the fetus is infected by the gonococcus *in utero,* hence no prophylaxis in the way of antepartum douches will avail. Immediately after birth every child should receive Credé's treatment—two drops of a 2 per cent solution of silver nitrate, and the excess washed away in thirty seconds by normal salt solution. Solutions of less than 2 per cent do not destroy the bacteria, and although solutions of 3 per cent are harmless they are apt to cause "silver catarrh" and are not required.

Edgar does not believe that protargol or argyrol are equal to silver nitrate in efficiency and attributes the occasional failures to the presence of ante-partum infection, to unskilled application or to inert solutions. If Credé's treatment is properly used opthalmia neonatorum can be almost entirely prevented, as evidenced by the report of Hofmeier's clinic with 0.33 per cent in over 5,000 cases.

[In his private practice the Editor is using 15 per cent argyrol as a prophylactic in all labor cases. No ophthalmia has developed in three years. Before this he used 1 per cent nitrate of silver. In nine years 1 case developed, but recovered perfectly. At the Chicago Lying-in Hospital argyrol is also used, and no case has developed. The nitrate of silver often gives a severe reaction, which sometimes leaves behind a chronic conjunctivitis. The argyrol does this less often. In a case of suspected gonorrhea the Editor uses the treatment as Edgar does, and he uses the nitrate of silver instead of argyrol. As a routine the 15 per cent argyrol is to be recommended.]

(1) Medical News, Sept. 23, 1905.

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